

THE PLOUGH

THE LOOM AND THE ANVIL.

FARMER AND MECHANIC.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—
NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILDINGS—OOT-
TAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES,
CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.

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The Plough, the Loom, and the Anvil.

PART II.—VOL. VI.

JANUARY, 1854.

No. 1.

AGRICULTURAL PROSPERITY.—THE MANUFACTURE OF IRON.

WERE all the people farmers, society could not long exist but in the most degraded condition. Our own Indians or the wandering Arabs are the best illustrations of the rank which, after the lapse of years, they must inevitably occupy. Why? Because they would be reduced to the necessity of using only the rudest tools, and would be confined to the most simple kinds of clothing, as skins and vegetable products, essentially unchanged in form or texture.

The first step in the elevation of a nation thus reduced would be the acquisition of the convenient tools wrought by the educated artisan, and a knowledge of their uses. In other words, skill in the manufacture and uses of iron is the first and essential step towards improvement. No other road has ever been opened by any nation that has emerged from barbarism to civilization. Not having the ability at first to manufacture for themselves, it would be for the interests of such a nation to cross the ocean, or to pay others for crossing it, who would bring to them these magic implements, and instruct them in their uses, though it should be at the cost of a large part of their scanty harvests.

But it does not follow that it would be wise for them to pay more than was absolutely necessary, in obtaining these supplies, nor to continue such an arrangement an indefinite period. This is very obvious.

Hence, we infer the truth of the fundamental article of our creed, that the artisan should have a place by the side of the planter and farmer, and receive his food from the granary, with the least possible cost of transportation or inconvenience of any kind.

We ask the attention of the reader for a moment, while we look at the changes which are necessarily involved in carrying out the doctrine, so zealously advocated even in our own day and our own country, that it is for our interest to become dependent upon foreign nations for various products of the arts and manufactures.

The decree is made, we will suppose, that *Whereas* labor is so much cheaper in Great Britain than in this country, and *whereas*, the entire cost of this metal is the cost of LABOR ONLY, the rough material being dug out of the earth, *therefore*, IRON shall no longer be manufactured in any of the States of this Union. Every furnace and forge must be closed forthwith and for ever. (We will see presently whether this is merely a fictitious case.) The most obvious results of such a movement are—

1. A large body of men are thrown out of employment. They are left without any means of support.

2. Their families are deprived of all their present resources. The landlords, under whose roofs they have slept, and at whose tables they have been

fed, and who have thereby secured their own daily bread, are equally helpless. So, too, are the butchers and bakers, who have furnished them meat and bread; the tailors, who have clothed them; their shoemakers, hatters, merchants, &c.; all who have dealt with them; the doctors who have tended them in their sickness, and who have healed them when wounded; the instructors who have taught their children, and all the various classes of people who have been employed in their domestic and other family affairs.

Again, all these bone-and-sinew men paid taxes of various kinds, in company with others, who are now left to bear them alone. The number of schools must be diminished, and those who continue to attend them must travel greater distances. The Sabbath congregation is too much reduced in numbers and strength to sustain its usual services, and its minister must be dismissed. Many such cases not only must necessarily occur, with the change proposed, but have already occurred in many communities. How many such incidents do you suppose we should witness, on the occurrence of the event supposed, in old and staid Massachusetts? Our own personal knowledge of this section enables us to count up nearly thirty villages, towns, and cities, that have sprung into being in that State, and collected a population of more than 80,000 souls, with all the array of churches, schools, and other important institutions, which, but for the arts and manufactures there located, would never have had a being, and the destruction of which is inevitable, the moment that the beat and hum of the loom and spindle shall cease to be heard. In New-Hampshire, we can count such a population to the amount of some 30,000 more. But we purpose now to confine ourselves chiefly to a single branch of industry, in its connection with agriculture, the

MANUFACTURE OF IRON.

This branch of industry, as all our readers know, is carried on in the State of Pennsylvania far more extensively than in any other section of our country. Still, this interest is by no means unworthy of notice in many other States.

Thus, by the census of 1850, the capital invested in this manufacture is as follows:

	<i>Pig-iron.</i>	<i>Wrought-iron.</i>
New-York, - - - -	\$605,000	\$1,131,300
New-Jersey, - - - -	967,000	1,016,843
Pennsylvania, - - - -	8,570,425	7,620,066
Maryland, - - - -	780,650	1,420,000
Tennessee, - - - -	755,050	1,021,400
Ohio, - - - -	620,800	1,503,000
Total of six States, -	\$12,298,925	\$13,712,609

The sum total of the capital invested in the manufacture of pig and wrought-iron, in all the States, is \$31,841,645, while the value of the entire annual products is \$29,495,851.

The amount invested in iron castings in several of the States, is as follows:

Massachusetts, - - - -	\$1,499,050
New-York, - - - -	4,622,482
Pennsylvania, - - - -	3,422,924
Ohio, - - - -	2,063,650

In all the States, it amounts to \$17,416,361, while the annual products are estimated to be \$25,108,155.

Destroy the value of this kind of labor by some system of legislation competent to effect such a result, and this capital would not be merely diverted into other business, but a great share of it would be entirely destroyed.

But again, the number of hands employed in this labor is not inconsiderable. From the same source, the census of 1850, we find that the number of persons employed in the manufacture of

Pig-iron, is	-	-	-	-	-	-	20,448
Wrought-iron,	-	-	-	-	-	-	13,257
Iron-castings,	-	-	-	-	-	-	23,589
Total number of hands employed, -							57,294

The entire average value of monthly wages is set down at \$1,412,597,76 or the enormous amount of \$16,951,173,12 per year.

Then take another view, and see the "harmony of interests" in the various industrial pursuits. Besides its intimate connection with various employments, as already suggested, the manufacture of iron requires an immense amount of coal, both hard and soft. The sum total of these articles annually consumed in this manufacture, is 1,274,196 tons of mineral coal, and 71,089,814 bushels of coke and charcoal. What an army of men, with their families, are supported by the labor of providing these iron-makers with their fuel!

Run over these long rows of figures once more, and try to form an estimate of their true value. Look through some optic glass till you can see the villages peopled by these workmen, scattered over all the land, now occupied by moral, industrious, and contented men, well provided with food and clothing and home, rearing and educating their families to become respectable and perhaps influential citizens. Blot these villages out of existence, and quench these fires, and they become wanderers, struggling for a precarious support, and their families and themselves even tempted to habits of vice, and to become dangerous members of society. They cannot, in such event, be consumers of your produce, for lack of means. They have been deprived of their livelihood, (no imaginary scene,) and are left helpless, and often in a "strange land."

And are the agriculturists of our country not affected by these revolutions of our national industry? Their burdens are increased, and they lose the means of sustaining them in the same day. They must deliver their "tale of bricks," though they are cut off from the necessary supply of straw.

But this view would by no means do justice to the importance of this form of industry. We should look, not only to its actual, but to its possible extent. For example: with all the increase which has happened to it, (and it has increased materially even since the census of 1850 was prepared,) we imported into the United States, in the year 1852, foreign iron to the amount of \$21,626,993. With the large increase in our domestic manufacture, an increased amount has been imported over the amount imported in previous years. The wants of the country are increasing in a still greater ratio. The demand for iron rails, required by the railroads now in process of construction in this country, is greater than the possible supply of all the furnaces in the world, allowing five years for their completion. Who ought to reap the benefit of these immense contracts—ourselves or foreigners?

We have confined this view to a single branch of labor, and are unable to illustrate the numberless connections which this one sustains to other forms of industry. We must leave this for the reader to do as he may. It is ob-

vious, however, that all the arts are dependent on this one. The whitesmith and the blacksmith furnish nearly all the tools in all departments of mechanical industry. So intimate is the connection of this one metal with the well-being of society, that were we materialists, believing the soul and the intellect to consist of any *substantial essence*, we should be inclined to regard iron as its chief element.

He who ponders continuously over any of the evils which prevail in communities, begins to measure their length and breadth and depth in a manner that approximates towards a correct appreciation of their importance, while all other evils retain their original pigmy dimensions. This gives rise to most of the *isms* of the day. So it is with the subject we are considering. We have looked at the value of one form of labor, and it increases in its proportions till they are gigantic. A similar result would follow, should we pursue a similar course with other departments of industry.

He who does this, probably holds in higher estimation many things which others regard with entire indifference. But we shall be the better prepared by such process to decide whether it is for the interest of the agricultural laborer to destroy our own industry, and depend on "the great workshop" across the ocean for those articles which we can supply for ourselves, if we will.

We say again, as we have in a recent number, that we do not pretend to establish, by such views, the necessity of high or low tariffs, but only the duty of *essential protection*. Whatever this actually demands, is abundantly urged by such views as we have here taken. What amount of tariff is actually required by different trades, belongs to another part of the subject. We are satisfied if we have deepened the conviction in the mind of the reader that these branches of industry are by far too valuable to be thrown away, and that the one determination of every true American should be PROTECT AMERICAN INDUSTRY. The contrary doctrine can only be described as practical insanity and wholesale suicide.

Nor is it a man of straw that we have been constructing for the mere purpose of destroying it. The value of these interests to our country is not perhaps denied; but we are told that we tax other interests for the benefit of one, and that this is unfair and unjust; that all should buy as cheap as he can, &c. This assessment of others for the benefit of the manufacturer is denied, and appeal is taken to the "prices current" under the various policies of different times. But suppose it to be true. We ask again, were a subscription paper circulated among the farmers within ten miles of Lowell, Manchester, Lawrence, &c., or around Pittsburgh and other places in which the iron manufacture has acquired a prominent position, how much per centage on their present taxes would each one pay, before he would suffer those places to be depopulated? Scarcely one that would not pay double and threefold his State and county taxes, while many would pay ten times, and even *fifty* times that amount. And the propriety of this action would be fully justified by a regard to the pecuniary interest of each. It is to much more than this amount for their present profit to retain such a market as these centres of trade open to them. Indirectly, and to some extent, all enjoy this benefit, if they have any thing to sell. Like the circling ripples in the brook, which are scarcely lost but with the sands which confine them within given limits, so the influence of these gatherings of the people in compact masses, all or most of them being consumers and not producers of agricultural products, give an increased value to them even at points quite distant. This distance will in time be substantially annihilated. Communications will

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be opened, and the tide both of population and of food to sustain them, will alike flow in with increasing rapidity. Can you dam up the waters of the Mississippi or the Hudson, so as to cut them off from the ocean? You may compel them to force their way through new channels, wrought out by their own forces, and this is all you can do. So it is with human enterprise. Whatever pursuit our citizens may elect, they have long ago resolved to belong to society, to the State, to the nation. And they act accordingly. They take an interest in the great questions that have a special interest only in distant sections of the country. But it is their country, and the measure is to be conducted by the rulers in whose election they were active, and it is for the benefit of fellow-citizens that they urge on the project. Such men will make a way for the transportation of their merchandise any where, if there is a market at its termination, at any thing less than ruinous prices. Probabilities in their favor are all they demand ere they assume the most gigantic projects.

It is, then, one of the great duties of the friends of American industry, or in other words, of Americans, to establish markets, centres of trade, where the producer can meet the consumer at the least cost, and, without paying commission agents or factors, receive into their own hands the full value of that they have to sell.

Farmers and all classes are "taxing" themselves continually, and often at no small rates, for the sake of being, practically, neighbors to the manufacturer and other consumers of their produce.*

Establish such centres of trade all along our streams, and even "elsewhere," wherever the steam-engine can be made to act its part, and then these "favored men," the manufacturers, will build their own railroads, while the farmer finds a market at his own door, not only for his own crops, but for the purchase of what he wishes to buy.

AGRICULTURAL TRUTHS FORCIBLY EXPRESSED.

At the recent cattle show, in Dayton, Ohio, Governor Wright, of Indiana, made some very excellent remarks, from the report of which we select the following:

He began by saying that he had just returned from Yankee-land, which he had visited for the first time in his life. He had attended several New-England cattle shows and fairs, especially in Vermont. He was struck every where with the appearance of comfort and independence that on all sides met his eye. The hum of business was heard in all directions. He never saw so industrious a people. Every body seemed to have something to do, and to be at work. This would make a poor land rich. The farms were not so good, but the farmers were better than in the West. Owing to their

* Taxes are assessed, in some form, on every thing. The housekeeper, whatever other pursuit he may follow, buys corn of the agriculturist, and *pays him for raising it*. He then pays another "tax" to the miller for grinding it, and a third to the baker, &c., and would pay at higher rates than he is now charged, rather than dispense with these services. He pays another tax to the wood-cutter, and another to the charcoal-dealer, and so on, through an endless round; and each receives taxes from others in his turn. The partner of a mercantile house insures not only the honesty and efficiency, but the health of the other members of the firm. The sickness of either of them is substantially a tax on the house. It is the peculiar glory of democratic institutions, social, political, &c., that all good of whatever kind receives from the many some consideration in return, while we all pay something, in some shape, for value received, though often far less than the good it brings us, the chief cost being paid by those most especially and directly benefited. If our neighbors improve their houses, it makes the neighborhood more desirable, and the value of our own is increased, but our *taxes* also are increased.

economy and industrious habits, he verily believed the farmers of New-England lived better, enjoying more of the comforts and luxuries of life, than the same class of people in any other part of the Union. He had searched for the secret of this prosperity, and had found it, as he believed, in the *order and system* of the people. There is more of this in the East than in the West. The haphazard, helter-skelter policy is not prevalent. The labors of individuals and of bodies of workmen and of whole communities are systematized and divided off, and this system is carefully carried out. This insures success. In the West, every man fights on his own hook, and he lives more by fighting and brandishing his arms, than by steady working. Idleness and want of system on the richest soils are sure to breed poverty and vice; whereas industrious and frugal habits are the sure road to competency and wealth.

There was, too, a pride of *home* in the North—a desire to make that beautiful and happy—which lay at the foundation of all social excellence and all public good. From a love of home, all true patriotism proceeds till it reaches the State and National governments. It was not so in the West. Governor Wright declared that one of the greatest evils of the West, one which he would labor to correct above most others, was to think first of the national capital, at Washington, and then the patriotism of the politician descended till it reached himself as an aspirant for public office. Every man in the West has the whole national government on his shoulders. He wished they would first take care of their *homes*, and then the government at Washington would be best taken care of. He mentioned an anecdote that took place in Vermont whilst he was in that State. The State elections had just come off, and the Whigs, though naturally in the majority, had for the first time for many years been beaten. A good old Whig farmer came home with a sad heart, and related the dreadful news to his patriotic wife. What, exclaimed she, has our dear old Vermont fallen into the hands of the enemy? It is, alas! even so. Well, then, ejaculated she with an emphatic sign, if *Vermont is gone, the Union is lost!* That is the principle, said Governor W. He wanted every man to feel as if every thing centered in his own home, his own town, county, and State, and that if *that* suffered, the nation was in danger. He verily believed that the town system of New-England was the seed-bed of true democracy. People legislated at home. They met in their school districts, to see about educating their children together; they all understood one another and their families; then, if a road between neighbors was to be made or repaired, or a bridge was to be built, the people all got together and legislated upon the subject. This was a popular democracy, and it was here our free institutions were born. The school-houses of New-England were our republican line of fortifications. From these school districts and town-meetings, emigrants have gone forth all over the Union, that have spread free principles every where. Cold and sterile as New-England was, she was rich in good principles, and rich in her enterprising and intelligent men. Said Governor Wright, "*If what is now this nation, had been settled two hundred years ago in the valley of the Mississippi, we should have had no New-England; and if we had not had a New-England, we should never to this day have been a free Republic.*" It was one of the most beneficent ordinations of Providence, that this country should have been originally settled on the rock of Plymouth. The coldness of the climate and the sterility of the soil created that very necessity which is the mother of invention and the stimulus of effort; and these have filled the land with hardy, enterprising, well-educated men.

[The effect of the system of town corporations is not overrated by Gov. Wright. The town meeting, and the score of little circles which so often collect around a New-England town-house, in which all discuss with zeal and earnestness, untrammelled by parliamentary rules, are the primary schools of democracy. They teach men to appreciate the true meaning of liberty, and to examine for themselves the soundness of any policy which is commended to their attention. Having acquired thus the habit of investigating questions affecting school districts and townships, they insist upon the privilege of investigating and of approving or condemning all the political doctrines and systems of doctrines that are promulgated, whether by senators or by presidents; whether urged by candidates for office in their own district, or by members of Congress in the capitol of the nation. It is in these schools, too, that the leaders of great political parties on the high places of our nation first acquired or so successfully cultivated the ability to use the gift of speech so fluently and efficiently.]

We have long thought of penning a chapter on this subject, and may very possibly be "moved" to do so at an early day, by the suggestions so happily made in the foregoing extract.—Eds.]

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SOUTHERN AGRICULTURE.

MR. EDITOR,—*Dear Sir*,—My friend, Colonel R——, has paid me an undeserved compliment, and could himself have much better discharged the duties requested than I can. I will, however, to the best of my limited abilities, drop you an occasional letter on *Southern Agriculture*. My time, by the way, is much taken up with the labors of the farm, and when the day closes, I am generally too much fatigued to be a profitable correspondent, my reading and writing being generally done by candle-light. I do not keep a manager, but superintend my farm, &c., personally, and have done so for the last twenty years.

I am what may be termed a book farmer. From 1820 to 1845 I was engaged in the mercantile business, but read much on the subject of farming. In 1834, I withdrew from the active duties of the counting-house, and shortly after purchased a poor farm, of some 250 acres, which had starved out the original proprietors. I here laid out some \$5,000 in necessary buildings, stocking the farm, &c., and for the first five or six years barely made a support, and was often ridiculed for my book notions, as some of my good neighbors were pleased to term them. I, however, continued to read Ruffin's invaluable *Register*, the *Cultivator*, by Judge Buel, and other journals. By deep ploughing, close attention to business, and proper system, with regular rotation of crops, my farm began to pay in 1840.

The farmers, as a mass, in Virginia farm badly. Our farms are too large, and I hesitate not to say, that every acre of farm land in our State could be made to produce double as much as it now does, under proper cultivation. Too little attention is paid to making manures, and properly applying them. We plough too much land, we plant too much, we sow too much. Ten acres well ploughed and manured are worth twenty or even thirty poorly tilled, and yet it requires as much labor, nay, more, to plough ten acres of poor, as ten of rich land, the latter always being more friable and more easily tilled.

Our staple grain crops are wheat, corn, rye, and oats. We cultivate potatoes, turnips, mangol-wurtzels, carrots, parsnips, and other root crops, but they are minor articles. Cattle, horses, sheep, and swine are raised in considerable numbers. The county of Rockbridge, near the centre of the State, in the Valley of Virginia, will compare favorably with any county in the State, in point of intelligence or agriculture. There is, indeed, much broken and thin land, but the county is finely watered, and I might say, with almost unlimited water-power. On all the streams there are fine bottom-lands, the best of which are worth \$100 per acre. The best up-lands, with bottom, average \$50 prime up-lands, limestone, \$30; thin lands range from \$5 to \$20 per acre. Fine, or rather good flouring-mills are numerous. Furnaces, forges, and foundries are convenient. The central railroad passes through one end of the county, a plank-road and mud pike-road pass through near the centre, and soon the North river will be canalised to Lexington, one of the prettiest small inland towns in Virginia. Here is situated Washington College, richly endowed, (the Father of his country having in his day donated to it \$10,000,) with able professors, at the head of whom is Dr. G. Junkin. The Military Institute is also located here, with some 150 cadets. Colonel F. H. Smith is at the head of this Institution, supported by a staff of accomplished officers. There are also classical and mathematical schools, of the first order, in other parts of the county, Brownsburg boasting of a very good one.

Brownsburg, Va., November 23d, 1853.

FLAX CULTURE.

PROF. WILSON, in his late lecture delivered before the New-York State Agricultural Society, adopted the following conclusions in relation to flax-culture:

1st. That flax is not an exhausting crop; that its peculiar suitability to different soils and climates, the short period it occupies the soil, and the market returns of an average crop, render it a valuable addition to the ordinary rotation.

2d. That the recent improvements in the process of treating flax, whereby the fibre is prepared at an *immense saving, both in time and labor, all nuisance avoided*, and the *waste products beneficially utilized*, offer great inducements for the establishment of small factories in suitable districts; thus directly encouraging an increased cultivation by insuring to the grower a ready and constant market for the produce.

3d. That a large breadth of flax is annually sown in the United States, of which the seed only is rendered available as a market produce, the straw being only used to a very limited extent for the preparation of fibre, the rest remaining on the field or being carted home for rough litter.

4th. That a very large sum, about \$14,000,000 to \$15,000,000, is annually expended by the United States in the purchase of linen goods from Great Britain, which country is obliged to procure the raw material for their manufacture from other countries with which the United States has no commercial relations.

5th. That it would appear expedient that the United States should utilize the large quantity of flax straw already grown, and increase her production sufficiently, at all events, to supply the quantity in a manufactured state which she requires for the consumption of her own population.

GERMAN AGRICULTURAL SCHOOLS.

MR. C. L. FLEISCHMAN, who was educated in one of the German agricultural schools, and is one of the editors of the *Polytechnic Journal*, says :

Who is not acquainted with the history of the wars which enervated Germany, which exhausted all her pecuniary means, and brought her to the verge of utter ruin ? Germany was after the close of the French war in a pitiable condition ; and had it not been for her kind soils, which for thousands of years enabled her to stand the severe calamities which befell her during that long period, Germany would now be a second Greece. She adopted, at an early period, various means to improve her agriculture. Professorships of agriculture were instituted at the universities, periodicals and journals were published to disseminate modern improvements, fairs and meetings were regularly held to encourage the farmer ; but all that gave not the desired results. A thorough education was found necessary, practical and scientific education, which enables the farmer to enhance the value of his landed property, as circumstances and condition allow it, to give them the knowledge to improve and change the various modes of culture, *and to be more than a mere imitator*. Proper agricultural schools were wanted, and the monarchs of Germany spared no means to accomplish this important object. The ablest men were selected for the institutions, and nothing was spared to induce them to take charge of them. The late King of Prussia, who, like his ancestors, paid great attention to all improvements in husbandry, was the first to establish such an institution. He invited Thær, the celebrated German agriculturist, to settle within his kingdom, and introduce agricultural schools. Thær accepted his offer, and left Cella for Berlin. The other monarchs of Germany followed the example of the King of Prussia, and Germany had, in 1847, 62 large institutions. With some of them Forests and Veterinary schools are connected. Austria then had 9 ; Prussia, 12 ; Saxony, 5 ; Bavaria, 16 ; Hanover, 2 ; Wurtemberg, 8 ; and other States, 14 ; in all, 62.

THE MINERAL RESOURCES OF BOLIVIA.

FROM an article in the *New-York Courier and Enquirer*, we gather the following facts in relation to the mineral productions of this State :

Gold abounds in various portions of Bolivia, and is worked with profit ; but it cannot be reckoned among its most prominent sources of wealth. Tin mining, although comparatively a new business, is now among the most profitable of pursuits. The richest and most numerous veins of tin are found in the region of the Onero river, in the central portion of the high table-land. The ore is an oxide of the crystallization, and in most cases may be wrought with ease. The Indians are the principal laborers. They sell the products of their toil to the foreign merchants, who carry on a lucrative trade in the article.

Copper occurs in various parts of the country, both in the metallic state and as an ore. In the province of Lipes, particularly, the ores are very rich, and the metal is easily extracted. At Coracora, in the northern part of Bolivia, the metal occurs in small metallic particles, diffused through a friable gray rock. This rock is ground, the earthy portion washed out, and the remainder, which is sold as *barilla*, yields 90 per cent. of bar copper. The

owners of several of the copper mines are said to accumulate fortunes more rapidly than any other men in the country. The Indians, however, are the chief workers of the mines, selling the ore, or barilla, which they procure, to the merchants.

But the silver mines should perhaps be regarded as constituting the essential wealth of Upper Bolivia. The extraction of this metal requires more capital and more skill than that of tin or copper, and is therefore never entirely in the hands of Indians. Previous to the long distraction of the country during its contest with Spain, there were probably worked ten thousand valuable silver mines; but as the Spanish difficulties turned the public attention in another direction, made labor more difficult to obtain, and drove a large amount of capital from the country, the mines were gradually deserted, and at the present time it is estimated that but one hundred and fifty are wrought. At least two-thirds of the abandoned mines have not become exhausted or diminished in richness. The inducements for the re-opening of these mines by enterprising capitalists are manifest. They contain ores of silver of good quality, which can be procured at a moderate cost. In some of the mines, steam-pumps must be used to keep them free from water; in others, tunnels are to be cut; but this outlay *is not in the way of experiment*; for the kind of ore, the breadth of the vein, and the depth to be reached, are all known before-hand. The titles to the mines, too, are perfectly safe. If a mine is neglected more than a year by its owner, it reverts to the government, and the government will re-convey it to any one who will carry on the work. This is for the purpose of encouraging foreigners, with skill and capital, to re-open the works.

AGRICULTURE IN VIRGINIA.

A STATE Agricultural Fair was recently held in Virginia, which appears by the published reports to have been the largest, most enthusiastic, and most interesting gathering of the kind ever held in this country, and one which promises to be of immense importance in advancing the interests of agriculturists in that State. We have had some brief accounts of this fair. It commenced on the 1st of November, when, however, only the officers and members of the Society were admitted within the enclosure. On the 2d, the gates were thrown open, and not less than twenty thousand of the best population of the State were admitted. Every body was not merely gratified, but astonished, as well at the immense concourse as at the extraordinary display of the agricultural and mechanical resources of the State. The annual address was delivered by John R. Edmunds. On the 3d, there was a ploughing-match, at which Madame Sontag, the vocalist, gave \$100 as a premium to the successful plough. Half the premium was given to the colored ploughman, (a slave,) and half to the owner of the plough and team. On the 4th, the exhibition was brought to a close by the award of premiums, and these were by no means few nor small, and the valedictory address was pronounced by Ex-President Tyler.

But the most enthusiastic portion of the performances was exhibited in the nightly meetings of the Agricultural Society during the week, at Metropolitan Hall. Of this, the *National Intelligencer* says:

"On the second night, a proposition was introduced by Lewis E. Harvie, Esq., of Amelia, to raise \$20,000, to be invested in State stocks, as a perma-

nent endowment of the Society. This was responded to in the most enthusiastic terms, various gentlemen putting down themselves and their whole families, to the third generation, as *life-members* of the Society, and others pledging their respective counties for from \$500 to \$1,000. The meeting was protracted to the hour of twelve, and before adjourning, the sum of \$39,000 had been raised!

The same scenes were enacted on Thursday and Friday nights, and the enthusiasm was kept up in a practical manner, until upwards of \$60,000 were subscribed! A suggestion that the Legislature should be called upon for a subscription was promptly put down, several members declaring that the farmers of Virginia, now that their spirit was aroused, needed no help of that kind, but would rely upon *themselves*; yet, during the proceedings, it was found that professional men, mechanics, and merchants, all claimed the right to aid in putting Virginia agriculture upon a firm and enduring basis. A wag declared that, so far from asking Legislative help, the Society was now ready to *shave the State debt!*"

EXPERIMENTS ON MOWING-LANDS.

REV. MR. CLIFT, of Stonington, is an intelligent and educated farmer. He recently published the result of sundry experiments, in the *Agricultor*, which we lay before our readers, with his remarks in connection with them. He writes as follows:

I have just concluded an experiment, designed to test the comparative value of coarse and concentrated manures, as top-dressings for mowing-lands. Two acres were selected that had been laid down to grass about five years, cutting in ordinary seasons from one and a half to two tons per acre. I recently came into possession of this plot of ground, and know little of its past treatment. The underlying rock is granite, the surface-soil black loam, the sub-soil a deep yellow loam, with gravel below this, and the whole soil well strewn with boulders. The lot was in the form of a long parallelogram, and was divided crosswise into parcels of a quarter acre each, and numbered from one to eight. The lot extended across a gentle slope, so that no manure would wash from one plot upon another. No. 1 was left without dressing, to show the natural yield of grass, and to give a standard of comparison. No. 2 was dressed with five one-horse cart-loads of coarse, unfermented manure from the cow-stable, worth about \$3, including expense of carting and spreading, or at the rate of \$12 per acre. It was put on early in March. No. 3 was dressed while the snow was on, with twenty pounds prepared superphosphate of lime, costing 50c. or \$2 per acre. No. 4 was treated in April with ashes, sown at the rate of thirty-two bushels to the acre, worth about \$4. No. 5 had twenty pounds of guano mixed with three bushels of charcoal cinders. These were thrown out from furnaces of locomotives, and in this case were made from Virginia pine wood, and were probably of little value, except to absorb and retain the escaping ammonia. They were mixed several weeks before use. Value, \$2 per acre. No. 6 had twenty-five pounds of guano mixed in the same way, worth \$2.50 per acre. No. 7 had a superphosphate of lime of home manufacture. Bones were digested in sulphuric acid put in whale oil-casks, after Professor Way's recipe. The bones had been dissolving four or five months. About four quarts of the liquid were added to twenty pounds of guano and one peck of salt, and the whole intimately

mixed with three bushels of the charcoal cinders. As the bones cost us nothing, the value of the whole was estimated at \$1, or \$4 per acre. No. 8 was dressed with two barrels of droppings from the hen-house. As charcoal cinders and plaster of Paris are constantly kept under the fowls, no accurate estimate can be made of the quantity of pure manure. But it was estimated at two bushels, which, at 50c. per bushel, would make the cost for an acre \$4. These last four dressings were applied April 4th, during a rain.

Now for the results. Early in July, the grass from two square rods in each of the plots of ground was carefully weighed in the green state, and one of these parcels cured and then weighed again, and the dry weight of the remaining parcels calculated from this one.

[For the convenience of a reference, we here arrange the experiment in a tabular form.—ED. AGR.]

No. of plot.	Application to each quarter of an acre.	Cost per acre.	lbs. Hay per acre.	lbs. Gain per application.	Gain per acre.	Loss per acre.
1.—	Nothing.		3,920			
2.—	5 one-horse cart-loads of green, unfermented manure, applied in March.....	\$12 00	4,880	960		\$7 20
3.—	20 lbs. prepared superphosphate of lime, applied upon snow, in March.....	2 00	4,960	1,040	\$5 20	
4.—	8 bushels ashes, applied in April	4 00	3,920			
5.—	20 lbs. guano, mixed with three bushels of charcoal cinders, from R. R. engine, sown April 4th, during rain.....	2 00	4,000	80		1 60
6.—	25 lbs. guano, mixed and sown same as No. 5.....	2 50	4,720	800	1 50	
7.—	20 lbs. guano, 1 peck of salt, 3 bushels of cinders, and 4 quarts of dissolved bone liquid, applied April 5th, during rain.....	4 00	5,280	1,360	2 80	
8.—	About two bushels hen manure, contained in 2 barrels of plaster, &c., applied April 4th, during rain	4 00	5,440	1,520	3 60	

These experiments perhaps do not determine any thing with perfect accuracy, and yet enough of them bringing out similar results, would demonstrate—

1st. That concentrated manures are far preferable to stable manure for dressing mowing-lands. Eighty pounds of prepared superphosphate of lime in No. 3, or one hundred pounds of guano in No. 6, produce larger results than \$12 worth of stable manure. The estimate given of the comparative value of these manures in the *Country Gentleman*, that one hundred pounds of guano is about equal to a load of manure, does not do justice to guano as a dressing for mowing-lands. It sustains the opinion advanced by Colonel M. P. Wilder and others, that it is cheaper to buy guano at the market price, than to have stable manure given to you, if you have to pay for carting and handling.

2d. It is shown that there is good economy in using larger quantities of guano than eighty pounds to the acre. While this quantity in No. 5 did not pay expenses, one hundred pounds in No. 6 gave a very handsome profit. It

is believed that there would be increasing economy in its application up to two or three hundred pounds per acre.

3d. It is shown that farmers have a cheap method of doubling their crops of hay on all lands that do not now produce over one and a half tons an acre. Five dollars worth of guano suitably composted, and applied early in March, or what is better, in November, could hardly fail to add one ton and a half of hay to the yield of each acre.

4th. That the prepared superphosphate of lime in No. 3 and No. 7, is among the cheapest and best of manures. The return is larger for the capital invested than from any other manure.

5th. It is shown that bones dissolved in sulphuric acid, is not only a very powerful manure, but that where farmers can get bones for carting, or at a small cost, it is good economy to manufacture superphosphate of lime themselves.

6th. It is shown that hen-manure is an article of very great value as a fertilizer. Farmers are perfectly safe in having large flocks of poultry, a place to keep them, and abundance of loam, charcoal dust, and plaster of Paris, as absorbents.

7th. The experiment suggests to farmers that more capital invested in manures would make their farming far more profitable. If any one doubts it, let him invest a few dollars in guano, or in some good prepared superphosphate of lime, and apply it to any of his exhausted mowing fields this fall. I believe the returns will rarely fail to be more satisfactory than that of bank stock.

Similar experiments to the above will be continued hereafter.

TOBACCO CROP OF CUBA.

A CORRESPONDENT of *Hunt's Merchants' Magazine* describes this as follows:

The tobacco plants are generally upon the margin of rivers, yet there is a large quantity of good tobacco raised upon high-lands distant from rivers, but the former situation is preferable.

The quantity of land cultivated depends altogether upon the means of cultivation, and the product of the crop differs in value according to quantity and quality; as high as \$30,000 has been realized by some of the heaviest planters from a single crop of tobacco, whilst the expenses attending its cultivation are considerably less than those incident to the raising of sugar-cane.

When the tobacco is gathered, it is hung upon poles about fifteen feet in length to dry; the leaf is allowed to remain a short time in the air after it is ripe, to dry a little, but not so much as to cause it to break during the operation of hanging.

As soon as the tobacco is dry it is piled, selecting a day for that purpose a little damp, that the leaf may not be liable to be broken in the handling; the pile, when made, is carefully closed from the air; the floor of the piling-house is made of wood, and elevated from the ground, that the moisture may not rot the tobacco; the pile is formed with symmetry, and in such a manner that the leaf may not be broken. This operation of piling is made that the tobacco may acquire a good color, and it is never allowed to remain more than two months in this way, when, by this time, and often much before, the selection and preparation for market is made.

The preparation of the tobacco for market is as follows, viz.: The largest, most perfect, and best quality leaves are first selected, and are called *Libra*, and are superior to all the others; the next is called *Primera*, and is nearly equal to the former; and then comes the *Segunda*, a little inferior to the *Primera*, and so down to the *Sesta*, or sixth, which is the last section of the tobacco called *Principal*. From this there is likewise taken the *Quebrado*, or damaged, to which class belongs all the large leaf which is broken, or worm-eaten in the field.

The *Principal* is composed of all the tobacco taken from the plants for the first time, as the leaves of the second gathering produce another class of tobacco, which is called *Capadura*, and is inferior to all the former-mentioned kinds.

There is likewise a kind called *Libra de Pie*, which is made up from the first leaves, or those which come in contact with the ground, and is the poorest quality of the tobacco.

After the selection, as above expressed, the tobacco is packed by forming the leaves into bunches, as follows, viz.: The *Libra* and *Primera* is composed of 25 leaves, the *Segunda* of 30, the *Tercera* of 35, and the *Cuarta* of 40, which are the classes used for wrappers; and the remainder are composed of 45 leaves, and are used for fillings; these bunches are then packed into bales of about one hundred pounds weight.

The most destructive worms feed upon Tobacco at night, hiding during the day; they are pursued at night by the planters with torches made from pitch-pine slivers.

Your obedient servant,

A SUBSCRIBER.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE COTTON CROP.

MESSRS. EDITORS,—Since mine of the 16th of September was published in 264–266 pp. of your magazine, there have been important changes, greatly reducing the crop of cotton; and having your general invitation, I make bold to intrude.

The thermometer in my piazza, with a southern exposure, stood, at 6 A. M., on the 23d September at 52°; on 24th, at 42°; 25th, at 34°; 26th, at 52°; 29th, 38°; 31st, 38°. Ice was seen on 24th, and cotton was killed; small bolls were so frosted that they have not opened. Last year, the freeze was 15th November, three weeks later. This, with at least ten days' loss in the spring, makes one month's difference. All persons conversant with the cotton crop, can appreciate what I may calculate as a loss.

Last year, with 22 effective hands, I gathered and sent off 195 bales. This year, with 28 to 30 hands, I have no idea I can make 160 bales, being 35 bales less, with an increase of one-quarter effective force, or a difference of one-third loss. Should this be general, the crop cannot reach 2,200,000 or 2,300,000 bales.

I have just returned from Columbus, where I saw friends from various portions of the State, attending the Baptist State Convention, as well as an old planter, who travelled across the country from Jackson, Miss., to Marion, Ala., thence to Columbus. And to-day I saw my brother, A. K. Montgomery, from his plantation in the Louisiana swamp. From all I saw and heard above, and from what I can learn east and west, I believe my crop to be over

the average. I can buy 100 acres of cotton with 10 bales; 300 acres with 40 or 50 bales, and not at all unusual. In the swamp, where they made 15 to 17 bales per hand last year, they are now nearly done, and make only 10 bales.

I was nearer done picking on 1st of November, than last year on 1st of December. Have now only children picking; my able hands are in the woods.

I now reduce my figures to a loss of one-sixth, allowing for increased culture, and put the crop at two and a half millions, and do not think it will reach two millions and three quarters.

M. W. PHILLIPS.

Edwards, Miss., November 21, 1853.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MANUFACTURE OF AXES IN COLLINSVILLE, CT.

THE importance of this branch of domestic industry will, in some measure, be realized, when we learn the extent to which the business is carried by a single establishment, which has been in operation about twenty years, under the supervision of Messrs. Collins & Co., in Hartford, Ct. The works of the Company are located at Collinsville, on the Farmington river, to which place a branch of the New-York and New-Haven Railroad extends, connecting with the main road at New-Haven.

This Company is incorporated by an act of the Legislature, and has a capital of \$300,000 invested in the business. The machinery employed is of the most powerful description, ingeniously constructed, and skilfully adapted to the various purposes for which it is intended.

The entire works of the Company are kept in operation, and all the machinery driven by thirteen large water-wheels. Twelve hundred tons of iron, 200 tons of cast-steel, and 2,000 tons coal are annually consumed at this establishment. The Company employs about 350 men, and manufacture from 1,500 to 2,000 edge-tools *daily*, and the reputation of all articles bearing the mark of "Collins & Co." is of the highest order. Their trade is rapidly extending, and their sales are very extensive not only throughout the United States, but also in Canada, Mexico, Cuba, South America, and other foreign countries.

To those who have never seen the axe manufacture in all its various departments, a brief description of the *modus operandi*, by which the rough materials are transformed into the beautifully-finished and highly-polished axe, ready for the workman's use, will not be unprofitable or uninteresting.

More fully to illustrate this, the reader will imagine himself quietly seated in the accommodation train, from New-Haven to Collinsville. After a pleasant ride over an easy track, surrounded by picturesque scenery, he suddenly finds himself in the immediate vicinity of this thriving little village, snugly and beautifully situated amid the surrounding mountains. Here is a thrifty population of nearly 1,500 inhabitants, depending mainly upon the edge-tool business for their maintenance. Two churches, and a neat and convenient school-house, where 200 to 250 children regularly receive the benefits of an excellent education, add essentially to the attractions of the village, while the pleasant dwellings and beautiful shade-trees which adorn the streets, give an air of comfort and contentment to its general appearance.

Entering the extensive and admirably arranged work-shops of the Company, the visitor is struck with the perfect system and regularity which are

exhibited in all the various departments. Much of the labor-saving machinery in use at the works of the Collins Company was invented, patented, and constructed here, and is unlike any other in use. The iron, after being properly heated, is carried to a machine which cuts it to its proper shape, forms it, and punches the eye to receive the helve. The steel (previously cut into the necessary size and shape) is welded to the iron under trip-hammers, and drawn down to a more perfect form. After this, another workman examines each axe, and regulates the eye, and also takes out all the crooks and irregularities of the edge. It is then taken to another shop, and by a powerful machine, (invented at the works,) *shaved down* by a cutting operation to a nearly perfect edge, and is now ready for *hardening*.

The process of properly tempering edge-tools is one of extreme practical difficulty. Indeed, by the old method, it is nearly impossible to arrive at the precise point of temperature, and give the requisite hardness without leaving the axe too brittle for general use. This difficulty, however, has been obviated by the invention of a new plan, based upon a principle by which the most unerring results are obtained. Every tool is subjected to a uniform heat, produced by means of ovens peculiarly arranged, and is regulated by thermometers in the most perfect manner, by which the temper is most accurately and uniformly *drawn*, and a fine and permanent cutting-edge produced.

After the axe is sufficiently *tempered*, it is taken to the polishing shop, when the surface of the cutten portion below the eye is finely polished on emery wheels. By this means an even surface is obtained, the axe receives a fine polish, and any defects or flaws in the steel are rendered visible, and may be readily detected. The axes are now carefully examined by inspectors, whose sole duty it is to attend to this branch of the business, and every tool having the least flaw or imperfection that would injure it, is rejected; and only those which are perfect are allowed to receive the mark or stamp of the Company upon them. By this means, the axes of Messrs. Collins & Co. have attained a reputation at home that is well founded, and their superior qualities are known and appreciated abroad. After stamping, the *head* of the axe is dipped in asphaltum to prevent its rusting, and a *label* with the signature of Samuel W. Collins is put on every tool, the more effectually to guard against counterfeiting. After being weighed, the axes are enveloped in paper, and packed, a dozen in a box, ready for market.

Although we have more particularly described the manufacture of *axes*, Messrs. C. & Co. do not confine themselves to making these alone. Edge-tools of various descriptions, such as adzes, coopers' tools, hatchets, &c., &c., also picks, sledges, and mining tools generally. These are all of the most perfect finish and superior quality, as hundreds of those who have used them, can attest from their own experience.

Such establishments as this are an honor to the country, and creditable alike to the proprietors and to the skilful mechanics in their employ; and we trust the time is not far distant when similar manufactories of articles of general utility will be seen springing up in all parts of our country, and prove a source of wealth and prosperity to all who embark in the enterprise. Some of the best cutlery in the country is now manufactured by our own artisans, from the product of our native mines; and with our mountains teeming with coal, and the richest ores in the world, there is no good reason why we should be dependent on the importation of a single article of cutlery or hardware from foreign countries.

GOOD MILCH COWS.

THERE is no field that promises a richer harvest than that which secures a supply of good milch cows. The present condition of the milkers, in this country, is very far below what it should be, and pays a very small profit to the farmer, compared to that which he might and ought to have.

A writer, in the *Albany Cultivator*, says that a good cow worthy of the name should yield, on the average, for the first 100 days after calving, $7\frac{1}{2}$ quarts at a mess, or 15 quarts per day, amounting to - - - 1,500
For the next 100 days, she should average 5 quarts at a mess, - - - 1,000
For the succeeding 100 days, do. 4 quarts do., - - - 800

Total number of quarts, - - - - - 3,300
—giving her a respite of 65 days before calving. 3,300 quarts of milk, at 3 cts. per quart, is very near \$100. The cost of keeping may be reckoned as follows:

For pasturage, the season, - - - - - \$12
Two tons hay, - - - - - 26

This or a proximate condition may be reached not only by the purchase of valuable cows, at the outset, but by the improvement of the breed by the best of those already purchased. The selection of a good bull is quite as important as the choice of a good cow.

Still, there is a great difference in the different breeds, and sundry experiments have been made to test their comparative value. We present one or two of these below:

AYRSHIRES AS MILKERS.

MR. EDWARD M. SHEPARD, of Norfolk, in this, St. Lawrence county, is a breeder of Ayrshires, says the *Cultivator*, and while he has made no experiments with particular or individual cows, like your correspondent "P., of Sennett, N. Y.," which, by the way, is not a proper method of testing the value of breeds, unless the whole herd be taken, has yet permitted to be published in the papers of this county, at the solicitation of myself and other friends, trials of his *whole* herd, the substance of which is here submitted.

Mr. Shepard had 14 cows, Ayrshires and their crosses on natives, half-bloods, six heifers, *milking for the first time*—time, the third week in June—feed, grass only.

Allowing one cow for family use, and deducting 40 per cent. from heifers, and his trial stood thus:

Cows, - - - - - 8
Heifers 6, reduced to cows, is, - - - - - 3·6

11·6

Deduct one cow for family, is cows, - - - - - 10·6

The product for the week was 12 lbs. 12 oz. per cow. The first week in July, feed grass only, and much affected by drouth, he milked twenty, *eight* of which were heifers, milking the first season, and this trial stood thus:

12 cows, less one for family, is, - - - - - 11·
8 heifers, 40 per cent. off, is - - - - - 4·8

15·8

Full cows, - - - - -

The product for the week, per cow, was 14 lbs. 13 oz., and a fraction over.

But, lest your correspondent might think my allowance for heifers too much, which, however, is considered a just allowance by the dairymen of the county, the result of the last trial, *without any deduction* for their being heifers, and four of them only two years old at that, was 12 lb. 5 oz. and a fraction per head, for the week.

I am advised by Mr. Shepard, that for the purpose of testing the merits of these breeds for the dairy, he will select some five or ten cows from this Ayrshire herd, and place them for some one week next autumn, or next June, against an equal number of any *other pure breed* of the same respective ages, owned by any one breeder or dairyman of the State. The cattle to feed upon grass only during the week, and for two weeks prior to the trial. The time to be notified through the *Country Gentleman*. The time to consist of seven days, fourteen morning and evening milkings, each milking to be weighed, and each day's product churned and weighed by itself, and the final test result to be in the aggregate, containing not over one ounce of salt per pound of butter.

Another writer, in the same journal, gives the following account of his experiments:

SHORT-HORNS AS MILKERS.

I never owned an Ayrshire; but for the last fourteen years, having milked short-horn grades, I send you the results of several trials made with them, previously remarking, that as we intend to make only just sufficient butter for family use, we have been at no trouble to prepare a suitable "milk-house."

Cow No. 1, fourteen years old, made in one week, in the month of June, 9½ lbs. butter—again in October, made 9 lbs. 2 oz. same time; this cow was always fat.

No. 2, three years old, made at the rate of 12¼ lbs. per week.

Nos. 1, 2, and 3, made 33 lbs. in one week of the month of June.

No. 4, three years old, with her first calf, made 11 lbs. 2 oz. in six days—the feed of these cows was grass pasture, and *nothing else*.

Gipsey 2d, thorough-bred, in the month of January, on hay feed, no roots or grain, gave 24 quarts of milk per day. The only trial ever made of the *quality* of this cow's milk was during the season of 1850, when her calf was allowed to take one half of her milk, no more; he weighed at seven months old, 700 lbs.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CULTURE AND GROWTH OF THE PEACH-TREE.

MESSRS. EDITORS:—Your correspondent, "R. B. H.," on p. 270, says, in closing the penult paragraph, "The stone of a peach from a seedling is little, if any, less certain to produce its like, than is Indian corn." I dissent. I have been planting seed of corn and peaches these many years, and have seen very many-fold more varieties of the latter than of the former. I put out some fourteen or fifteen years ago a young orchard of over 500 trees, and thought I had saved the stones of the choicest varieties I could find. They were put out by rule, cultivated well, staked, &c., &c. In 1843 to 1845, I cut them all down, and began to bud, because not over fifty or sixty trees were of any account, and only three or four varieties at that; the most of the good ones

ripened at the same time. I had a very superior yellow free-stone, ripening 1st of August, of which I planted some twenty-five seed, and have fruited them. They are all yellow, ripening within ten days of each other, some with globose glands, uniform and serrate, giving me some half dozen varieties, and not one fit for the orchard. From some fifty trees of that variety, I have had but one to equal the parent.

Where did the countless varieties of peaches spring from, Mr. R. B. H., if the peach is as certain as corn? I have been engaged in growing corn these twenty-five years; housed this year 5,000 bushels; and I dare you or any man to find over six distinct varieties of that, though I planted a mixed variety. Such sweeping remarks injure a good cause. They deter young men from progress. Some varieties of the peach will grow the same fruit, yet not always so good. The Heath, Columbia, &c., illustrate. By planting 100 pits of the Heath, you will get perhaps a dozen equal, and of a million, perhaps not one superior. Of the Columbia, you will get color, time of fruiting, the peculiar mark on the stone, the color of limbs, and shape of tree, but no better fruit, and ten to one if it is as good. I have in my orchard some 150 varieties, and though in possession of the choicest of earth, I continue to grow seedlings, hoping to aid the cause. I have given forth two of our best varieties, as a small return for the dozens I have been blessed with from others. I have peaches usually as late as November, and as early as the middle of June. I hope I may be excusable for defending my favorite pursuit.

MELACATUNE.

—, *Miss.*, November 21, 1853.

[NOTE.—We do not wish to take this interesting question out of the hands of our able contributors, but hope to hear from R. B. H. and others also. Yet we beg leave to suggest the *possibility* of a mistaken construction of the language of R. B. H., whose position was that *native* peaches would generally produce their own kind, and that the natives were or might be equal to any foreign. Possibly, the opposite results of the experiments of wise men may be the effect of a difference in reference to this fact. But we hope the subject will be thoroughly treated by these, and also by others equally able.—Eds.]

SHEEP-BREEDING.

WE commend the attention of sheep-breeders to the subject discussed in the following paragraphs, which were published in the *Ohio Cultivator*:

"Now is the time for flock-masters to look well to their ewes, selecting such as possess those characteristics which they desire to perpetuate, and rejecting those that are fit for nothing but the butcher. Sufficient attention is seldom given to this point, for though it is perfectly true that the male, in all animals, is of more importance than the female, yet for the production of perfect animals, it is absolutely necessary that both male and female be well bred, and, if not individually perfect in every point, the conformation of the *two* should be such as, when combined, form the animal desired. Good breeders understand this matter well, and assort their flock into several lots, procuring a buck for each lot with those points strongly developed in which the ewes are most deficient. But a vast proportion of farmers who keep more or less sheep, neglect this matter altogether. They often procure a buck, which, however useful he might be for other flocks, is totally unfit for

that which he is intended to serve. Again, in a large flock of ordinary sheep there are often two or more kinds of ewes with characteristics entirely different from each other; hence, a buck that might be beneficial to the one would be altogether unsuited to the other, and more likely to propagate imperfections than to neutralize them; yet how common is it to let the whole flock run together, and have the indiscriminate use of the same bucks. With judicious selection any of our ordinary heterogeneous flocks might, in a few years, be vastly improved without any more expense than is incurred by the present heedless, careless, and unprofitable system of breeding.

The present high price of mutton has led many, in this vicinity at least, to cross their common merino sheep with a Leicester or Southdown buck, for the purpose of obtaining good-sized lambs for the butcher. We believe good mutton will always command a good price, higher than at present, and that this system of crossing fine-wooled with mutton sheep, will be the most profitable species of sheep husbandry. We do not like to recommend any one to breed from such a cross, yet we are not sure but a little Southdown blood would improve the size, constitution, and fattening qualities of our *common sheep*, without materially injuring the quality of wool.

The time to place the bucks with the ewes depends upon the location, then breed, and the object of the breeder. As a general thing, it is not desirable to have lambs before there is some grass for the mother, and as ewes go from 22 to 23 weeks, it is easy to calculate in any individual case. In Western New-York, the first of November is considered best. At this season-grass is scarce and innutritious, and as it is particularly desirable that ewes be well kept while the buck is with them, it will be advantageous to give them a little clover, hay, oats, peas, or oil-cake, and to keep them at night in dry, warm sheds. It is well to give the buck a little extra grain or oil-cake separate from the ewes. Care and attention to the flock at this season, and during the winter, will be amply rewarded by an increased number of large and healthy lambs, and by more wool of a superior quality. Remember that warmth is equivalent to food, and that salt and water are essential to health, while regularity in feeding is very desirable."

Another writer, in the same paper, has well expressed an opinion we have long entertained, in reference to horns on sheep. We would extend the inquiry to all animals. Horns on the living are good for nothing but to wound and destroy. We, hence, go for *short-horns*, and eventually, for an improved breed with no horns at all. For wild animals, they are useful for defense; on domesticated, they are good for nothing. The writer referred to, says:

"There are two reasons which induce me to offer a few remarks to the farmer on the subject of polled sheep. One is, I believe, a decided advantage may result to the wool-growing community from a consideration of the subject. The other is, I am now compelled to buy horned rams for a cross of blood, because I cannot get such polled ones as I desire, that are not nearly allied to my own stock.

I believe that nearly all middle and long-wooled sheep are polled, while the males of the finer woolled varieties are usually horned.

I have for many years regarded horns on sheep in a domesticated state, as not only a useless, but a troublesome and expensive appendage; and in 1845, fortunately getting hold of a very superior polled ram, I commenced to try to breed a flock which should be hornless. I proceeded by not only selecting polled rams, but so far as practicable, perfect polled ewes also; and here let me remark, a ewe that appears to the casual observer to be without horns, is not always a perfect poll. There must be a cavity, instead of a fullness,

where the horn usually attaches, or she cannot be depended upon to produce polled lambs with certainty, although the sire be polled.

The result of my eight years' labor is, I do not now have but one horned ram lamb in about ten or twelve; and I do not believe that I have sacrificed one iota in form or constitution, or in quality or quantity of wool.

Some of my objections to horns are briefly as follows:

1. The substance that goes to make horns is the same that enters into the composition of wool.

2. If rams are polled, you may let all the pure-blooded ones run *entire* to the age of one or two years, and then, any that are rejected as rams, will make as good wethers as if gelded while lambs.

3. Where horned rams run in a flock in summer, they are sure to fight, and if they do not kill each other outright, loose the skin about the horns, become fly-blown, and without constant care, more or less of them die.

A gentleman, who has been engaged in wool-growing over twenty years, and who keeps near one thousand sheep, told me he annually lost enough rams from these causes to pay all his taxes.

4. Horned rams frequently strike ewes in the side, bruising them, loosening their wool, and occasionally causing them to cast their lambs.

5. You can shelter and feed about double as many polled as horned rams in a given space.

In conclusion, I would say I am always open to conviction. Has any one a reason why sheep in a domesticated state should have horns?"

EXPERIMENTS WITH SPECIAL MANURES IN SCOTLAND.

THE account of these experiments is given in one of the agricultural journals, "The Quarterly Journal of the Transactions of the Highland and Agricultural Society of Scotland." They appear to have been very skillfully planned, and carefully carried out.

The experiments, fifty in number, were made upon clover and rye-grass, barley and wheat, and three varieties of turnips. The fertilizers experimented with were yard-manure, dissolved bones, nitrate of soda, sulphate of ammonia, muriate of ammonia, refuse saltpetre, Peruvian guano, sulphate of potash, sulphate of soda, sulphate of magnesia, Richardson & Currie's manures, and disinfected dry manure. These various substances were used separately, and in various combinations. By the side of each application, a plot of the same kind of soil was left unmanured, with which the products of the manured portions were compared. Great care appears to have been taken in securing uniformity of soil and treatment, and in making an accurate estimate of the products, both of grain and straw, and of roots and tops. These special manures were only used in top-dressing, and were in all cases sown broadcast. In some cases, the whole dressing was applied at one time, and in others it was divided into two and three portions, and applied at successive periods.

EXPERIMENTS ON GRASS.—The soil selected for these experiments was of moderately tenacious clay, thoroughly drained three years previously, and manured the preceding year with sixty loads per acre of "lime compost," the seed being sown with barley. The profit and loss per acre is calculated by estimating the value of the excess products gathered from a manured imperial acre, over those gathered from the ground similarly treated, only not manured, the cost of cultivation being deducted. The following table is the

402 EXPERIMENTS WITH SPECIAL MANURES IN SCOTLAND.

result of the experiments most noticeable, the pound-sterling being reckoned at \$5:

Applied per Acre.					Net Profit per Acre over Unmanured Land.
115 lbs.	Sulphate of ammonia,	-	-	-	\$14 25
115 "	Nitrate of soda,	-	-	-	
100 "	Dissolved bones,	-	-	-	9 15
130 "	Nitrate of soda,	-	-	-	
115 "	Muriate of ammonia,	-	-	-	8 45
115 "	Nitrate of soda,	-	-	-	
40 "	Nitrate of soda,	-	-	-	7 42
60 "	Sulphate of ammonia,	-	-	-	
70 "	Sulphate of potash,	-	-	-	
40 "	Sulphate of magnesia,	-	-	-	
20 "	Sulphate of soda,	-	-	-	6 14
115 "	Refuse saltpetre,	-	-	-	
115 "	Sulphate of ammonia,	-	-	-	5 95
115 "	Dissolved bones,	-	-	-	
115 "	Nitrate of soda,	-	-	-	
					Loss per Acre.
230 "	Sulphate of potash,	-	-	-	3 48
100 "	Dissolved bones,	-	-	-	1 80
40 "	Sulphate of magnesia,	-	-	-	
70 "	Sulphate of potash,	-	-	-	
20 "	Sulphate of soda,	-	-	-	

EXPERIMENTS ON BARLEY.—The soil, like the preceding, clay, with an impervious sub-soil, and thoroughly drained. Among the results reported, were the following:

Applied per Acre.					Net Profit per Acre of Manured over Unmanured Land.
88 lbs.	Muriate of ammonia,	-	-	-	\$14 09
142 "	Nitrate of soda,	-	-	-	
38 "	Saltpetre refuse,	-	-	-	10 42
142 "	Muriate of ammonia,	-	-	-	
88 "	Nitrate of soda,	-	-	-	6 85
38 "	Saltpetre refuse,	-	-	-	
38 "	Muriate of ammonia,	-	-	-	1 87
88 "	Nitrate of soda,	-	-	-	
142 "	Saltpetre refuse,	-	-	-	1 86
142 "	Sulphate of ammonia,	-	-	-	
88 "	Sulphate of potash,	-	-	-	1 27
38 "	Sulphate of magnesia,	-	-	-	
100 "	Dissolved bones,	-	-	-	1 27
134 "	Nitrate of soda,	-	-	-	
34 "	Sulphate of magnesia,	-	-	-	1 27
112 "	Dissolved bones,	-	-	-	
40 "	Sulphate of magnesia,	-	-	-	1 27
50 "	Sulphate of potash,	-	-	-	
34 "	Sulphate of ammonia,	-	-	-	1 27
52 "	Nitrate of soda,	-	-	-	

32	"	Dissolved bones,	-	-	-	-	}	1 00
116	"	Sulphate of ammonia,	-	-	-	-		
75	"	Sulphate of potash,	-	-	-	-		
25	"	Sulphate of magnesia,	-	-	-	-		
								Loss per Acre.
100 lbs.		Dissolved bones,	-	-	-	-	}	3 94
134	"	Sulphate of potash,	-	-	-	-		
34	"	Sulphate of magnesia,	-	-	-	-		

In the experiment last cited, the loss arose from the high cost of the manure used, which exceeded the value of the increase of the vegetable product.

EXPERIMENTS ON WHEAT.—The following are some of the results reported, the soil being the same as in the experiments with barley. The preceding crop was potatoes, manured with 30 to 35 tons of home-dung, 60 cart-loads per acre of lime-compost being applied before the wheat was sown.

I. DIVISION.

Sulphate of Ammonia per Acre.							Net Profit per Acre.
74 lbs.	May 18th,	-	-	-	-	-	} \$30 02
74 "	May 30th,	-	-	-	-	-	
76 "	June 9th,	-	-	-	-	-	
224 "	May 18th,	-	-	-	-	-	27 27
112 "	May 18th,	-	-	-	-	-	} 4 00
112 "	May 30th,	-	-	-	-	-	

II. DIVISION.

NITRATE OF SODA							Net Profit
per Acre.							per Acre.
74 lbs.	May 18th,	-	-	-	-	-	} \$38 70
74 "	May 30th,	-	-	-	-	-	
76 "	June 9th,	-	-	-	-	-	
224 "	May 18th,	-	-	-	-	-	32 76
112 "	May 18th,	-	-	-	-	-	} 24 09
112 "	May 30th,	-	-	-	-	-	

III. DIVISION.

Sulphate of Ammonia and Nitrate of Soda in equal parts.							Net Profit per Acre.
224 lbs. of mixture,	May 18th,	-	-	-	-	}	\$8 25
74 "	May 18th,	-	-	-	-		
74 "	May 30th,	-	-	-	-		
76 "	June 9th,	-	-	-	-	}	4 45
112 "	May 18th,	-	-	-	-		
112 "	May 30th,	-	-	-	-		

IMPROVEMENTS IN THE SOUTH.

IN many parts of the Southern States, an increasing energy, in connection with the various industrial pursuits, is conspicuously manifest. This is well; it is more, it is glorious. But lessons of warning may be learned from the North, as well as examples of enterprise. The North has thrown away millions in useless projects. One such case has just now reached "the beginning of the end." One of the principal railroads in Vermont is surrendered into the hands of its mortgagees, whilst the other scarcely survives. Perhaps the advice we are about to give may partake, to some extent, of the character of certain discussions of "fundamental" doctrines in theology, as to the necessary priority of certain acts and emotions; but still we are quite sure that by far the easiest way, if not the safest, is to show the actual necessity of the improvement proposed. If success is only prophesied, there may be found many unbelievers. But show the public the business which is to support the road, and all will subscribe to its stock. Destroy the factories on the Merrimack, and what would those three railroads, now so valuable, be worth? Not forty cents on the dollar. They are now worth a large advance.

With extensive business on the line of a road, this mode of conveyance can compete even with a direct water communication. Thus the Eastern railroad, and the Boston & Portland railroad, though scarcely shorter than the route by sea, sustain themselves quite successfully. But it is by rapid traveling and cheap freights. It is also with the help of numerous manufacturing villages scattered along and near its track. The "lower" road passes through Salem, Ipswich, Newburyport, near Amesbury, through Portsmouth, N. H., and Berwick, all engaged extensively in manufactures, and some of them of extensive trade; while the "upper" road runs through or near Medford, Andover, Bradford, Haverhill, Lawrence, Exeter, N. H., New-Market, Great Falls, Salmon Falls, and Dover, to Berwick, all manufacturing towns, where the two roads intersect and are continued into Maine, receiving the freight of the extensive mills at Saco and Biddeford, and so on. No road will pay large dividends, without some such means of support.

At the same time, it is true that such facilities of transportation often create business. Factories will be built at suitable points, when they are brought into tolerable proximity to the great markets. But the location of these centres of industry is not a thing of mere accident. A large trade cannot be created merely by a railroad, but the iron track must connect something to be sold with a market equal to its necessities.

Hence, while we rejoice at all these indications of progress, as illustrating a spirit of enterprise, we also shall rejoice if no project shall be undertaken without reasonable evidence that the *stock* will find a market, after the ardor inspired by a new and hopeful zeal for improvement shall have passed away; and that the stockholders will get reasonable dividends. We rejoice, indeed, in some instances, where the public are gainers at the cost of stockholders. We know of many enterprises that sunk almost the entire amount of their first cost, which passed into other hands at a fraction of that cost, and paid good dividends on the second valuation, and now greatly accommodate the public. But when funds are scarce, such a course is ruinous to all parties.

Among the projects now exciting attention at the South, are the following: To connect Savannah, Mobile, and New-Orleans by a railroad, and another to connect Charleston and Savannah. A convention has also been recently

held at Elyton, Ala., having in view internal improvements in that State. In Texas, the same subject is exciting general attention. In Virginia, rapid progress has recently been made. At the late State Agricultural Fair, a very large fund was subscribed for promoting this branch of industry. The Covington and Ohio railroad has been commenced; the Norfolk and Petersburg Railroad Company ask for proposals, and indeed, there is a general and active interest awakened on these subjects. There is a continuous railroad now built or in progress from the extremes of New-England to New-Orleans! Beginning at Augusta, Me., the lines are now built to Portland, 90 miles; thence to Boston, 100 miles; from Boston to New-York, 236 miles; thence to Philadelphia, 90 miles; to Baltimore, 98 miles; thence, on the Baltimore and Washington railroad, now in operation; the Alexandria and Lynchburg road, 160 miles long, half of which is provided for; the Lynchburg and Tennessee road, 209 miles long, of which 70 are in operation, and the rest under contract; the East Tennessee and Virginia railroad, 110 miles in length, now under construction; the Georgia and Tennessee railroad, 120 miles long, nearly or quite completed; the Charleston and Memphis railroad, under construction; the Selma and Tennessee River railroad, 250 miles long, under construction; and thence onward by several roads, now under construction, to New-Orleans, making an aggregate distance from Augusta, Me., to Baltimore, of about 611 miles, and from Baltimore to New-Orleans, about 1,250, or less than FIVE DAYS' ride from Augusta to New-Orleans.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

EAST TENNESSEE.

MESSRS. EDITORS :—It may be that many of your readers have never visited this delightful country, East Tennessee. In the recollection of many of our surviving inhabitants, it was a wilderness waste, trodden only by the savage Indian and by the deer, wolf, panther, bear, wild-cat, &c.

East Tennessee lies in lateral valleys, and on gently-rising summits, ranging from north-east to south-west, with here and there a looming mountain-cap, which seems to kiss the clouds, and along whose base there sweeps the most transparent rippling stream of pure water.

See, too, the neat, white-dressed farm-house, with its tasteful yard. See the broad-brim, quaker-like barn, covering nearly forty square rods. Look at the acres covered with clover, timothy, corn, wheat, and oats. See her forests, the earth literally clad with building-timber, and other timber for useful purposes; the poplar or tulip-tree, mounting one hundred feet in the air, without a knot or branch; the oak, with his sturdy boughs waving in the breeze, over one hundred feet from the ground, the trunk as straight as a gun-barrel, which will cleave into boards, shingles, lath, rails, &c., like a Louisiana cypress. Our forests abound in many other valuable timbers. Our hills and mountains yield largely of that very valuable root, ginseng, which is so much in demand in foreign markets. Imbedded in her hills and mountains, are inexhaustible quantities of coal, iron-ore, and last, though not least, the finest and purest marble in the known world, quantities of which are now quarried for shipment to your northern cities. Her march is still onward. Already are many of her hills razed, her mountains tunnelled, her rivers bridged, and over these, with accustomed speed, the famed iron-horse brings in the necessities and luxuries of other lands, and carries out the rich products of her fertile soil.

Not many years will elapse ere the Old Dominion and our own Tennessee will join hands, by connecting railroads at King's Meadows, near Abingdon; and then, nearly a bee line will take us to you, the acknowledged emporium of commerce for the Union.

But what of the crops of the year 1853? The wheat crop in Eastern Tennessee is rather better and more abundant than usual. Consequently, prices are drooping. The same might be said of the hog crop; last year's prices cannot be obtained. The corn crop, in some localities, is light, but abundant in the aggregate; prices may be steady. The root crop, generally, is abundant, as are the hay and fodder crops. Oats may be said not to average so well, having suffered for want of rain in ripening. But ere long, East Tennessee must be a Germany for wheat. When our farmers learn, as they should, to sub-soil, plough, and bed their wheat-lands, then East Tennessee will yield her forty or fifty bushels to the acre. A word worthy of note to your thinking readers: "*Bed your wheat lands;*" drain them by the centres of their beds. Try it, brother farmer, and test its advantages.

With respect,

A. L. B.

Mill Bend, Tenn., Nov., 1853.

DEPTH OF SOIL.—ITS IMPORTANCE.

If 50 be assumed as the value of a given soil, when it is six inches deep, its value when of different depths is estimated by Thaer as follows:

If 3 inches deep, it is worth			38
4	"	"	42
5	"	"	46
6	"	"	50
7	"	"	54
8	"	"	58
9	"	"	62
10	"	"	66
11	"	"	70
12	"	"	74

Hence, each man may make an estimate for himself, with regard to every variety of his soil, whether the cost of increasing its depth will equal or exceed its value, after the task is completed. It is certain that all soils, in all situations, will not return the amount required to render them fertile to a considerable depth.

GATHER THE LEAVES.—IMPORTANCE OF DECOMPOSITION.

We have often urged this service, and do not hesitate to repeat it again. It might be well were it written in large letters over the stable-door.

There is, however, a difference in the qualities of the leaves of different trees, which is worthy of consideration. Some decompose much more readily than others, and some contain ingredients when the leaves are green that are injurious to young plants. *Oak leaves* are of this description. They decompose slowly, and contain an astringent quality before decomposition, which is injurious to vegetation. So also the *beech*, *walnut*, and *chestnut* leaves should always be mixed with dung, and decomposition be secured before they are allowed to come in contact with vegetation. The leaves of the *alder*, *willow*, and *poplar* possess but little value as manure, but they serve a very good purpose as litter. *Reeds*, *moss*, &c., if mixed with dung when green, decompose rapidly. But if they are first dried, the process is very slow.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

WOOD AND TIMBER LANDS.

In many sections of the country, the scarcity of timber for the practical and economic purposes is presenting an alarming feature. In many portions of the country, too, the use of fuel is so fast increasing, that the inquiry, How are coming generations to be provided? is much more than an idle question. Yet the axe is still swift in its work of destruction, and, what is more lamentable, the useless manner in which wood-lands are allowed to remain, in too many instances, furnishes but poor reason to anticipate their renewal.

With many it is a practice, in getting their annual supply of fuel, to get one tree in this place and another in that, thus running over the territory of trees, and, of course, marking the whole with paths, which, if multiplied, become waste land, and occupy an alarming portion of the wood-lot. Then, again, where the solitary tree is taken, a quantity of smaller timber is broken down, so that, in fact, the getting of a single tree amounts to a clearing; and a clearing it is apt to remain; the grass comes in, and in due time, the premises exhibit the appearance of a pasture.

We are pleased to see, that with more observing and careful owners of wood-lands, a better system of things is introducing itself. Instead of practising this wasteful, ill-looking system, they commence clearing, or cutting every thing clean in a remote part of the lot, and thus, each year, working nearer home, until the whole is cut over. A new crop springs up on land thus cleared, which, if protected from animals, will, in from fifteen to thirty years, according to soil and locality, yield a heavy burthen, and again invite the axe-man to its shade. The advantages of this system are obvious. The new growth is an even one, and there is no loss of timber from high winds, as is always the case in these forests, as the new growth protects itself from their influence.

There is a great saving of lands in the matter of paths; for one path through the lot is sufficient, and, as the operation advances homeward, that becomes useless, and itself grows up to trees. The new growth shades itself, and thus retains sufficient moisture in times of drought, and also protects itself from grass and weeds. As the timber increases in size, the feeble shoots die out, and themselves become, by decay, food for those that remain.

Nature dictates the time when forest-trees should be cut off, in order, either to kill the germinating principle, or to renew themselves. We have long noticed that when trees are cut while the sap is in a half active, half dormant state, as through the freezing and thawing season of spring, or for a few weeks after the fall of the leaf in autumn, reproduction is hardly to be expected. The vital energy of the roots all runs out in the flow of the sap, or bleeding from the pores. But any time in winter, chopping may be safely performed with a view to reproduction; so too from the time of the development of the leaf to its fall. Timber cut in June, if divested of its bark, acquires, by seasoning, great firmness and durability. Wood cut in August and September, if seasoned in the open air, is more valuable fuel than that cut in March; for it has ample time for seasoning, and retains all its goodness. In addition, the growth of a season is saved by allowing it to stand over summer.

Yours truly,

December 14, 1853.

W. BACON.

SUBURBAN RAILROADS.

AMONG the many projects for making money, there are very few that are more successful than suburban railroads. In all large and enterprising cities, rents are high, house-lots are held at enormous prices, and the streets are crowded. All the land is used for building purposes, and the inhabitants scarcely have a yard large enough to accommodate the operations of the laundry.

In the neighborhood perhaps there are beautiful tracts of land, far more eligible as building spots, at a much lower cost, and with ample room to accommodate a large population. But there is no regular or frequent communication between this neighborhood and the city, and hence these advantages are lost, and the entire mass of people, whose business is in the city, must reside within its limits.

But connect these by half-hourly coaches, or the far more convenient railroad car, and what is the consequence? The value of the land rises, while at these increased rates, multitudes are glad to purchase and build tenements, reserving a liberal quantity of land for purposes of convenience and of health, and though the city scarcely seems conscious of any loss, a large and prosperous village has grown up in an hour.

Who has "*made any thing*" by this process? Every body who has any concern in it. The original owners of the land have received double the former value of all their land for only a portion of it; the owners of the railroad now receive liberal dividends on the cost of the road; thousands are accommodated with comfortable and convenient tenements, and breathe a pure air, who were before shut up in close and inconvenient rooms, and were surrounded by an impure atmosphere. Children would celebrate the day which brought such a boon to their bodies and their minds. Taxes are probably diminished; and ere long, there is not only a village, but a township, where lately it was silent as the grave.

Look at the villages around New-York, all of which had an origin like this. Long Island is dotted all over with them for twenty and thirty miles. Where cars cannot run, the steam-boat supplies their place. So, too, on the territory between the North and East rivers. Within twelve miles of the City Hall are some six or eight villages, where, within two or three years, neighbors' houses could scarcely be seen from any body's windows, and the aggregate population must be 12,000 to 20,000. We say to all in like situation, Go and do likewise.

SCIENTIFIC OBSERVATIONS.

MR. JOEL W. ANDREWS, of Albany, during the past month, has made a series of barometric observations from the tide-water to some of the principal mountain-summits in Rutland county, Vt. As soon as the observations are reduced to measurement, they are intended for the Rutland county map. By an observation of the sun's meridian latitude, with a sextant and quicksilver horizon, the latitude of Killington Peak is 43 degrees, 46 minutes, and 14 seconds North.

The distribution of vegetation in a perpendicular direction from tide-water to the summit of some of these mountains is also noticed.

At an elevation of about two thousand feet above the level of the sea, the

chestnut and walnut disappear. Five hundred feet farther upward, oaks and elms become scarce. Thorn-bearing plants cease to grow at an elevation of about two thousand feet; although some of the same kinds are here found that grow at lower latitudes, yet they become smoother, and do not produce their thorny stalks.

The flat-bladed wild grasses grow at this elevation, but lose their sharp, wiry edges, which are produced on the low grounds.

At this elevation, the large forest trees grow to perfection, of which the beech, birch, and rock-maple are the most abundant of the leaf-bearing trees.

A standing rock-maple was measured with a sextant, one hundred feet high, and nine feet in circumference at its base. At an elevation of about three thousand feet, evergreen trees, or those yielding gums, are found in the greatest proportion, and continuing their upward course, diminishing in size until they find their upper limit at an elevation of about four thousand feet above the level of the sea, as indicated by the barometer.

Among the leaf-bearing trees, or those that shed their leaves in autumn, the white birch is here found to have the most extensive range, in a perpendicular direction. It is traced in this latitude 43 deg., 46 min. North, from the level of the sea to an elevation of about four thousand feet, where it finds its upper limit. Here commences the region of mosses and wild grasses, which struggle their way upward about one thousand feet further, as observed on the White Mountains, in New-Hampshire, by Mr. Andrews, in 1850. From thence upward, all vegetation ceases to grow, and the bare granite rock, in broken masses, piled in confusion six thousand five hundred feet above the level of the sea, to the line of occasional snow throughout the year.

MINERALS IN NEW-MEXICO.

We have in our possession, says the *St. Louis Intelligencer*, two specimens of ore from the *silver mine*, near Dona Ana, which is now being worked very successfully by Mr. Stephenson, though without that outlay of capital, which is necessary for the large product that is yielded by many of the mines of Mexico. We understand that, by different channels, a large number of similar specimens have been sent into the States, with a view to analysis by competent persons. Of the results of this analysis, those interested in the mines have no doubt, for the reason that they have a practical knowledge of silver mining, and are actually, by the rudest process, extracting considerable quantities of the metal from these ores. The chief object had in view by them and others in New-Mexico, who have sent in these specimens, is, that capitalists in the States, being satisfied that there are rich silver mines in the country, may have their attention turned to it. The range of mountains where this ore is found, is quite extensive; and no doubt exists among persons well qualified, from their knowledge of the silver mines of Mexico, to judge in this matter, that those mountains are stored in great abundance with this precious metal.

Besides these specimens of silver, we had shown to us, by Major Greiner, a quantity of quicksilver, weighing nearly a pound, which had been *scooped up* at Los Truches, near the Del Norte, about forty miles north of Santa Fé. This metal is found in globules, and sometimes in little pools near the surface, at the roots of shrubs, or on the earth, in damp spots underneath the rocks and stones of the neighborhood.

The mineral wealth of New-Mexico, as we have again and again contended, is greatly undervalued. The estimate put upon that territory by our countrymen does no sort of justice to its resources. A railroad through it would develop those resources to an extent, which, if predicted now, would be believed by nobody, save those who have been in the country and impartially examined it.

MINING IN NEW-ENGLAND.

THE present age is marked with many revolutions. The civil governments in the old world have not experienced a more thorough overturning than have the arts, and trades, and other industrial pursuits, in our own country. Every thing is changed. Not only are new manufactures introduced, but the old ones are so differently managed that they are not really the same thing, except in their products. For example: a worker in tin and sheet-iron of twenty years ago, performed all his labor with the hand, and a hammer, or wooden mallet. This was literally true, not only with the simple joint of stove-funnel, but from this, to the most highly-ornamented household utensil. Now, a good workman in tin or iron is actually unable even to make a joint of funnel merely with the mallet. He must have his improved machinery, or he cannot work.

An almost equally thorough change has taken place in the kinds of work performed.

The first discovery of coal in this country was hailed as important; and well it might, for the mining of coal will add more to the essential wealth of the country, than all the gold that will be dug for ages. But who, then, dreamed of finding coal in New-England? Our readers may remember a description of the Rhode Island coal-mines, in one of our numbers of last year. These beds extend into Bristol county, Mass., and have been worked there even longer than in the Island State. Prof. (now President) Hitchcock says, in a recent report, "that the whole of this tract, embracing not less than five hundred square miles, is a genuine coal-field, that has experienced more than usual metamorphic action." Whether this *metamorphosis*, which is described as both mechanical and chemical, is so extensive as to materially injure the coal for mining purposes, is not yet fully proved. Indications of coal have been met with in the town of Mansfield, Foxboro', Wrentham, Raynham, Bridgewater, Taunton, and Seekonk, in Massachusetts; and in Cumberland, Valley Falls, Providence, Cranston, Bristol, Portsmouth, and Newport, in Rhode-Island. In some of these localities there are several veins, and they vary in thickness from four inches to 6, 9, 10, 13, 21, and 23 feet.

More recently, other mines, of considerable promise, have been discovered. The County of Hampshire, Mass., contains a mine, supposed to be valuable, and embracing an area of about 10,000 acres. It lies between the branches of a small river, emptying into the Connecticut, and is within the townships of Northampton, East Hampton, Southampton, and West Hampton. Lead, copper, and silver have been found, and in considerable quantities, but which is most abundant, and the value of the mine for working, have not yet been ascertained. These mines are said, by practical and scientific gentlemen, to give good promise.

CHARLES T. JACKSON, M. D., geologist and chemist, says of this mine:

"Enough has already been disclosed by mining operations to encourage

the construction of a regular working mine with its proper shafts and levels. The certainty of a valuable metalliferous lode is now proved, but we cannot yet say whether lead or copper ore will ultimately predominate in the vein; for, although at present the lead ore is the principal mineral raised, we perceive that the proportion of copper ore increases as the vein descends into the rocks. The copper ore will probably form so important a part of the lode as to warrant its being collected separately from the lead."

The President and Directors of the Company, in their report, say:

"The engine-shaft is now sunk to the depth of fifty feet, going down in a vein which has yielded thus far a quantity of ore, considerably exceeding in value the entire amount expended on the mine, and the vein is increasing in richness as it goes down. This, the directors regard as sufficiently encouraging to warrant the erection of an engine of sufficient power to drain the mine and crush the ore, with a view to extensive mining operations, when the mine shall have been fully opened, and a mining-ground obtained for a large force. The engineer is now driving a level to cut the vein at the depth of ninety feet, which opens near the stream at the base of the hill, and through this level the ore may be brought out for a long time on the tram-road; he is also building a stone dam on the stream, for the purpose of providing a head of water for washing the ore. The whole work is prosecuted with great vigor."

We learn that a scientific corps is making very extensive and careful examination of that entire section of country, exploring further North, through the valley of Lake Champlain, and also at the White Mountains. It is supposed that tin mines exist in the latter district.

It has long been the popular belief that in the mountainous regions on the New-York side of Lake Champlain, both silver and tin are to be found. Some six or eight years ago, we were shown some specimens that were thought to resemble the latter metal. We were not at all impressed by the specimens shown us, and still, from the descriptions given us of other rocks dug from the mountains, we were almost inclined to think the mineralogists of that region had ridiculed the *notion* rather too hastily. On the Vermont side of the lake, in the county of Windsor, at Bethel we believe, we have seen indications of tin, though no attempt has been made to open a mine. In several sections of the State, copperas is abundant. The sulphuret of copper and of iron are among the most abundant minerals, leaving out their slates and marbles. The cost of transportation prevented the successful working of several mines, some years ago, on both sides the Green Mountains.

The most profitable *mines* in New-England, thus far operated, are the marble quarries of Vermont and Western Massachusetts. The entire range of mountains—the Green Mountains in Vermont, and the Housatonic in Massachusetts—abound with marble. Most of it is white; some of it is fawn-colored; while in other localities it is mixed with serpentine, which is also abundant, and thus receives a green hue, and in a variety of shades and mixtures.

At Plymouth there is a very elegant variegated marble, favorably to be compared with that from any foreign mine; but it is very hard, and, therefore, is difficult to work. In Middlebury, the white marble is of remarkable fineness. A specimen, now lying before us, will compare favorably with any statuary marble in the Crystal Palace. At Rutland, the grain is coarser, but the marble is very superior. Thousands of tons are sent to market, every year, from that one town. At Darby, further south, there is a variety of white marble, which is elastic when first separated from the quarry. If a large slab is sustained near its extremities, it bends very perceptibly. By

exposure to the air, it soon loses this property. In Brandon, Rutland County, Vermont, in addition to the white and "blue" marble, they dig immense quantities of iron ore, and the "tall chimneys" are quite numerous. They also find large quantities of a yellow ochre, which possesses considerable value. In one locality, on the banks of Otter Creek, which are there quite precipitous, this ochre gives its own yellow hue to the entire mass of earth, for a long distance.

Further north, in Orleans County, at Troy, and its neighborhood, is a furnace, where large quantities of pig-iron are manufactured. This ore is, also, in connection with huge masses of serpentine, of which much of the mass of the mountain consists. In this serpentine we have found very splendid specimens of asbestos and amaranthus, the fibres of which were to be measured by *feet*. Probably no locality in the world contains more real value in its rocks than the State of Vermont. Though much has been done in the work of mining them, the beginning is scarcely made.

Our readers are aware, to some extent, of the importance we have attached to this subject. In previous volumes, we have given it a share of attention; but the interest of this department is wonderfully increased, and we purpose to devote more time and space to its consideration. In subsequent numbers we shall attempt to describe its condition in different sections of the country, and invite those, more immediately interested, to send us papers on this subject, and, if possible, to forward to us illustrations, diagrams, &c.; and last, but not least, samples of the various ores or metals, from the mines, or from sections not yet even examined. We have many specimens from Vermont, chiefly collected by ourself, but we should be glad of many more. We would like to exhibit, in our office, a cabinet of these American ores and American minerals.

A WONDERFUL PRINTING PRESS.

THE New-York *Tribune* describes a printing press of wonderful capacities, just perfected by Victor Beaumont, a citizen of New-York. It says:

"The press, at a moderate rate of speed, will deliver *thirty thousand* sheets printed on both sides in a single hour! Its movement combines the original principles of Napier, which are applied by Hoe in his great press, with some new and beautifully simple arrangements and devices of the inventor. It has a large central cylinder like the Hoe press, on which are fastened the forms for both sides of the sheet to be printed. The type are held fast by Hoe's patent column-rules. The paper used is a continuous strip or band, dispensing with men to feed the separate sheets as in other power-presses. This strip or band, Mr. Beaumont arranges very ingeniously; he avoids the inconveniences inseparable from having it in the form of a roll, by laying it in a pile, folded backward and forward like a piece of broadcloth; one end of this pile is put into the press, which then draws its own supply without tearing or straining the paper till the whole sheet has passed through. As there are no feeders, room is obtained for additional printing cylinders; a moderate sized press will have twelve of these, and will require three hands to run it, two of them being employed in carrying and looking after the paper. Each twelve-cylinder press will work four of these continuous sheets at a time, or one to each three of its cylinders. Each sheet will pass twice through; at its first passage, one of its sides will be entirely printed, the forms of the

newspaper being impressed on it alternately. As it comes out, the machine lays it back again in the same sort of a pile, so that when it is done, the attendant supplies its place with a fresh pile, and then carries it to the proper spot for it to be taken up and passed through the second time, which prints the side left blank before. Then the mechanism passes it along to the knives which cut the sheets apart, while another contrivance puts them in neat piles ready for the carriers. These knives are very ingenious. A serious difficulty has been experienced in other machines designed to print a continuous sheet, from the fact that an ordinary knife cannot be relied on to cut paper which is wet enough for printing. This inconvenience Mr. Beaumont obviates by making his serrated, or saw-shaped knives with long and acute teeth. The points of the teeth easily pierce the paper, and once having obtained an entrance, the cutting is completed in an instant."

IMPROVEMENTS IN FARMING.

FARMERS are an "injured race" in more than one respect. They are sometimes called the mum profession, or those that have to get lawyers to make all their speeches, and sometimes the stand-still profession, or those who make little or no progress in their art. These both are calumnies. We have elsewhere defended them against the first, and now have a word to say in reference to the second.

We deny that they are of that dull and stupid class, which have eyes but see not, and ears but hear not. They see and hear too much to believe all that is addressed to them by their volunteer overseers and self-created supervisors, and are very unwilling to risk what they have earned by hard labor, on the mere recommendation of those who claim a percentage for their instructions. And this is right. We love the staid character of many of our rural districts, who know of many of the modern *isms* only by report. They guard safely what they get, and they get what they can by those means which they consider reliable.

But have they not made great progress in their art? Unquestionably they have. And for our first witness on this point, we will call that old plough that we all remember in our grandfather's out-house, if not in our father's, and which is, to-day, on exhibition in the north-east gallery of the Crystal Palace. Yet it stands "mum" by the side of the modern plough, as it does in that gallery, and though it was the property of no less a man than Roger Sherman, of Connecticut, the defendant stands acquitted of the charge of "no progress." Then call up the cultivators, and hoes, and forks, the caris and wagons, the shellers and reapers, the threshers and cleaners, of recent times; those of times gone by are among the things, most of them, not only that *are not*, but *never were*. It cannot be said of them even as was said of Troy, *Troja fuit*,—and again the defendant stands acquitted.

Nor is this all. In the saving of and in the preparation of barn-yard manure, there is a great improvement, enough to affect materially the value of the crops. New manures, before unused, are often and generally turned to account. Composts are prepared. Mineral manures are purchased; the phosphates, the super-phosphates, and the improved super-phosphates; the guanos of Peru and other countries, all are modern and even recent. It is not long since our farmers first heard the name of gypsum as a manure.

Eighty years ago bones were not used as manure, and the super-phosphates were unknown till 1790.

We are inclined to believe that more progress has been made in these matters than we find in almost any other trade. For we have just begun to enumerate the improvements of the greatest value. Improved implements, as means, are important. But *improved crops* and improved stock are of still greater importance. And look at the varieties of pears and apples, and other fruits, on the tables at the shows of every county in the States. Berkshire rivals even Norfolk, and Western New-York stands up unabashed before either, while Iowa, and other States far west, are already gaining ground upon the older sections of country. In a southern tour, within a few weeks, we were shown some apples that were raised in and brought from Iowa, as specimens, that could not be beaten by those on the tables of the Massachusetts Horticultural Society.

The sales of imported animals for the last few years in every section of country, are ample testimony as to the improvement of hogs, sheep, and cattle.

Notwithstanding all this, one of our *excessively* scientific journals declares that no trade or calling has made so little progress.

But still further improvements are made in the construction of their buildings, and in the increased comfort thereby secured. All such improvements, however, are but incidental. They grow out of a deep conviction that a farmer is some body, and can afford to have domestic enjoyment as well as others.

PREPARING POULTRY FOR MARKET.

"How shall I dress and pack my turkeys, geese, ducks, and chickens, to send to market?"

That question is thus answered by the *Tribune*:

Hang your turkeys up by the heads, and cut the jugular vein. Pick them dry. Remove the intestines, and wipe inside dry. If you use water at all, do it by holding the bird by the legs, and letting an assistant pour the water through them. Wipe, and hang them up in a cool place twelve hours, or till thoroughly dry. Serve geese, ducks, and chickens the same way. Do not scald them, unless you would like to have them spoiled. Take a box that will hold 250 chickens, close packed. Put only 200 in it. The remainder of the space fill with RYE straw—clean rye straw—no chaff. Do not use wheat straw, or oat straw, if you can avoid it. You may use coarse, clean, marsh hay. A wisp of straw in each bird will be advantageous. Nail up your box tight, and hoop strong, and mark plainly what is in it, and to whom it is sent. Send only in cold weather.

"To whom can I send my poultry for sale?"

We cannot tell you. Look to the advertisements, and make your own selection of a commission merchant. You had better send by express, and take a receipt of the agent, guaranteeing the delivery of the box in three days in this city; and thus any body and every body, who raises or buys chickens, along any of the great western railroads, may send them to this high-priced market during all the cool months of the year.

THE GREAT EXHIBITION.

SINCE our last issue, some changes have been made in reference to the management of this vast collection of mechanical and artistic products. The exhibition, as we now understand it, will remain open so long as its proceeds are remunerative. The various articles that may be purchased will be delivered at once, and the Crystal Palace, for the month of December, and thereafter, has been, and is, a huge and splendid bazar. We are not certain that this arrangement will materially affect the extent of the show, as new goods will replace those removed, while a change will, to some extent, heighten the interest of repeated visits. But we exceedingly regret that so little has been done by all the journals of the city and country, to show up the inventions of the machine arcade. Though less extensive than it should be, it is a very good collection of mechanical ingenuity and skill. Many of the machines exhibited have been published elsewhere, but there should be a good "picture of the machines of the Crystal Palace."

But we must proceed with our account of this rich show, and we commence by a short description of

THE GOBELIN TAPESTRY.

We have often been asked what there is in this which is so peculiar, and which renders it so very expensive. We are now able to give a more particular account than we have heretofore, by the perusal of a long and instructive paper, on this subject, in the last number of *Putnam's Illustrated Record*. This number, by the way, is very rich in its illustrations, and contains much valuable matter in its text. Limited as the largest journals are, compared with what is required to describe so large a collection, Mr. Putnam's *Record* will be very serviceable, when completed, as furnishing individual samples of large and various classes of goods. It deserves a far more liberal patronage.

The Gobelins, two brothers, Jean and Gilles, were eminent dyers. They were natives of Rheims, and in the time of Francis I. they took a small house in the Faubourg St. Marcel, and, by persevering industry and a careful application of their knowledge of chemistry, then so little understood, they surmounted all obstacles, and, by the beauty and firmness of their colors, at length secured a very extensive and profitable trade. The wealth thus acquired was invested in lands and houses, and they erected "one of those quaint, unsightly edifices," occasionally seen in the neighborhood north of Notre Dame, which was nick-named "Gobelin's Folly." This title was changed, by a royal edict, to that of the "Royal Manufactory of the Gobelins."

Their successors, the brothers Cannaye, added the manufactory of tapestries to their trade of dyers. These were succeeded by a Dutchman, named Gluck, and Jean Liansen, who first used the high-loom in the manufacture of tapestry.

The weavers of tapestry had been divided into two classes, one using the high-loom and known under the title of the weavers of the high-loom, or fine drawers; the other, under that of weavers of counterpanes. By a parliamentary decree of Nov. 11, 1621, the union of these two was effected, and their letters-patent were granted by Louis XIII., in July, 1636.

The earliest mention of tapestry occurs in an edict of the Chatelet in Paris, in 1295, which authorizes the establishment of a manufactory of the tapestry of the high-loom, &c., &c.

Having repaired and embellished the palaces of the Louvre and the Tuilleries, and other royal residences, Colbert "next bethought himself how he could furnish and decorate them in a style corresponding with the magnificence of their architecture. With this view, he called together all the eminent artists and workmen who were scattered throughout the kingdom, and, by splendid offers of pensions and privileges, induced most of them to enter into his plans. He contemplated uniting these different branches of industry into one vast establishment, and placing it under the direction of some capable officer, to be named by the king." To secure the permanent success of the enterprise, he induced Louis XIV. to purchase the old hotel of the Gobelins, in which a manufacture of tapestry was still continued. In November, 1667, by the king's edict, was created *The Manufacture Royale des Meubles de la Couronne*. Le Brun, his first painter, was made director; and, by means of immunities, privileges, &c., he secured the services of men of great and lasting reputation. One of them was Sebastian le Clerc, the author of the well-known engraving, *Mai des Gobelins*, designed for a permanent May-pole in the court-yard of the establishment. The base of the pillar forms a pedestal, 21 feet in height; above it is placed an oval medallion, surmounted with palms, on which Virtue is seen trampling on Ignorance and Envy. Beneath is a figure of History inditing its records on the back of Time.

Artists from the manufactory at Brussels, who had become famous for their copies of the cartoons of Raphael and Jules Romain, were induced, by liberal offers, to engage with Colbert. The best painters were employed to compose pictures, to serve as models for tapestry.

It is not strange, therefore, that, in those days so notable for the love of ornament, these products of art were sought after throughout Europe.

In 1694, however, the establishment began to decline. Through the want of funds, the king's orders were suspended, and the number of employées was greatly reduced. In the reign of Louis XV., the establishment was temporarily closed, but was again opened for the execution of some orders from the king, for decorations for the royal residences.

In 1791, the establishment was placed on a different footing, the workmen being paid by the year. This change has improved the quality of the tapestry. Now, the artist makes the warp himself and forms his own designs, and selects his own colors, though the whole is under a single superintendent, and the artistic details are confided to an experienced painter.

The high-loom now are exclusively employed. "Two instruments suffice to work this loom, the comb and the needle. The artist places himself before the loom, separates with his finger the threads of the warp, in order to see the design, and taking the needle, charged with the color he requires, passes it between the threads, after raising or lowering them by means of the treadle, upon which his feet rest. He then presses down the silk, or wool, he has placed, by striking it with his comb. The needle is generally made of ash and is from 18 to 20 centimetres (inches) long. Its head is round, and it terminates in a blunt point. The body is hollowed out, in order to contain the worsted or silk. The comb is made of ivory, somewhat like an iron wedge for splitting wood; is 15 or 16 centimetres in length; its width at the top, 5 or 6, and at the bottom 4 or 5. The bevelled end is composed of 17 or 18 teeth, separated by narrow intervals, through which the threads of the warp pass."

The time required for the execution of a piece of tapestry varies, of course, according to the size and the difficulties of the picture; but it is estimated, on an average, at about a square centimetre in a year. The value set upon a

metre of this tapestry is about 3000 francs. The number of workmen employed is about 120, and the annual expenditure, which is charged in the civil list, is near 300,000 francs.

The dyes of the Gobelins are as renowned as its tapestry. This superiority is owing, principally, to the skill and experience of those employed in this department.

The productions of the manufactory of the Gobelins, as those of Beauvais and Sevres, are exhibited once in two years, at the Louvre.

The following is a list of these tapestries, exhibited in the Crystal Palace, with the prices (in francs) at which they are valued.

GOBELINS.

"Autumn," after Lancret, executed in 1849, by M. Maloisel	-	14,000
"The Wolf and the Lamb," after Desportes, by M. Thiers, in 1842, and		
"The Hound and her Companion," after Desportes, by M.		
Prevotet, in 1842,	- - - - -	8,500
"Subject from the Chase and Still Life," after Desportes, by M.		
Hypolite Lucas,	- - - - -	20,000
Two seats and backs for chairs, from designs by M. Godefroy, executed		
by Messieurs Renard and Gouthier,	- - - - -	2,500

BEAUVAIS.

"Combat of the two Goats," after Audrey, by Chevalier,	- - -	4,000
"The Skaters," after Lancret, by same,	- - -	6,000
Landscape, after Desgoffes, by Auguste Melisse,	- - -	8,000
Three leaves for a screen, after Audrey, by Chevalier,	- - -	20,000
"The Reading Lesson," after Bouchet, by Chevalier.	- - -	2,500

SEVRES PORCELAIN.

We have repeatedly referred to the elegant show of M. LAHOCHÉ. We have done so because his is, at least, *one* of the most elegant courts in the Crystal Palace. But we refer to it again for the purpose of giving some information in respect to these wares, which we could not find space for, conveniently, at an earlier issue.

Like the tapestry, above spoken of, it is manufactured under royal patronage. The first establishment of such a manufactory was in 1738, at the Chateau de Vincennes, but afterwards, 1755, it was removed to Sevres. It comprises a museum, an experimental school, and a model school. It is, in fact, a royal establishment, the inspection of which is open to all, in which are to be seen the best models, the best artists, the entire list of *materiel*, of all kinds, used in the manufacture of such wares, with the modes and contrivances by which the labor is performed.

Like the tapestry of the Gobelins, the manufacture of this ware at once reached the highest state of perfection. This was the golden age of painting, and the best artists were employed. The materials used were of the finest quality. The ornaments, which were very abundant, were brilliant and imposing, of course; partaking, in these respects, as in others, of the styles then prevalent at the French court. But no one, accustomed to exhibitions of this kind of art, can fail to see that the extraordinary elegance of the designs, and of the painting of the ancient Sevres, is unequalled in all the rich and abundant show of wares, of this description, in the Crystal Palace, and, as we suppose, in the "wide, wide world." The Dresden wares are its most successful imitators.

The modern Sevres wares are rather more substantial, or, perhaps, we

should say are less frail, and less highly ornamented. It is only in the ancient, that we see imitations of pearl, turquoise, &c., in the bottom of a plate, increasing its cost two, three, and four-fold. But we know not why ornaments are out of place, or excessive, there, any more than when displayed in a table, or bedstead, or wash-stand, or in a carpet. We love beauty any where, and wish all the world could look at it, when they work and when they rest, at home and abroad. Beauty is beautiful every where. *We* like to see a handsome shoe. Still, costly as these are, they afford no profit in the manufacture. The modern Sevres is very beautiful. Some of those for sale by M. Lahoche, which are his own manufacture, are of the highest order, and they are of much less cost than the ancient ware.

The ornaments of the modern ware, as of the ancient, consist of an indefinite variety of landscapes, flowers, living figures, &c. The painting is done by artists of the greatest skill.

We must defer our continuation of the goods displayed in the U. S. Miscellaneous Department till our next issue.

MACHINE ARCADE.

We here present engravings of GWYNNE'S PATENT CENTRIFUGAL PUMP, as seen on exhibition at the Crystal Palace.

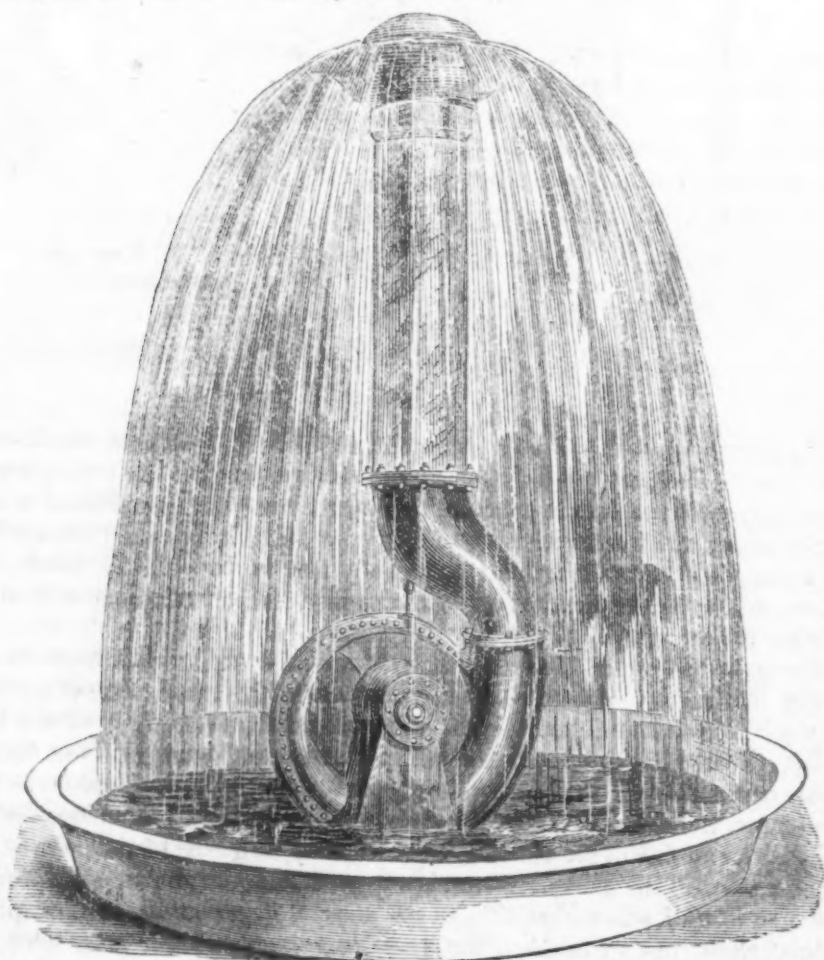


Fig. 1.

Fig. 1. is a large pump, exhibiting as the central fountain. Its capacity, with an economical application of power, is 6,000 gallons per minute.

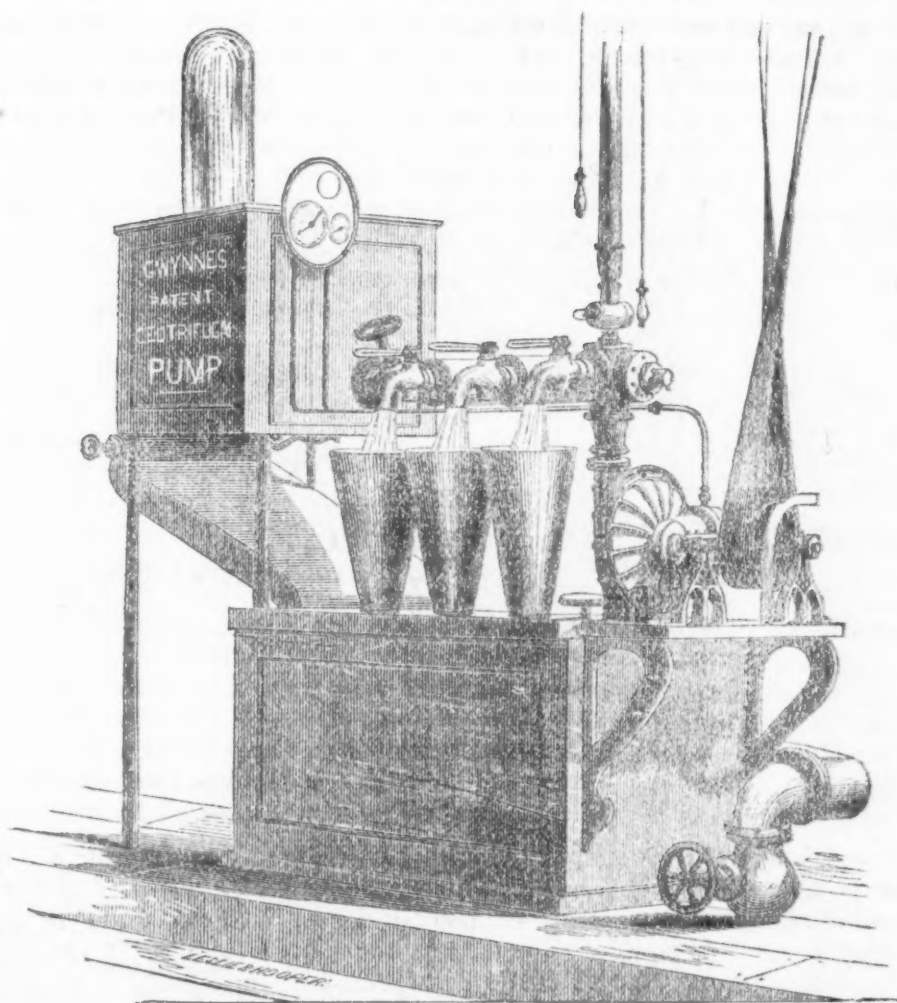


Fig. 2.

Fig. 2 represents a pump, located in the Machine Arcade, of much smaller size than the last, and of a different pattern, though upon the same principle; the discharge being much smaller in proportion to the diameter of the disc, and is calculated for forcing water to great heights. It is used at the Palace for forcing water into the tanks upon the towers, 63 feet high, which it does at the rate of over 300 gallons per minute. When working without discharge, the gauge has shown a pressure equal to a height of 180 feet. The ordinary discharge, at a few feet elevation, is over 500 gallons per minute.

Fig. 3 is a small pump, of the same pattern as the last. Capacity, 25 gallons per minute. It is used for supplying the fountain in Mr. Phalon's bower.

The principle upon which these pumps operate is centrifugal force. We have witnessed its operation upon a small scale, in the force with which water is thrown from the surface of a grind-stone when rapidly turned. If we suppose the grind-stone hollow, with orifices at the centre, into which water constantly flows, passing to the circumference from which it may as constantly escape, we shall have an approximate idea of the structure of the centrifugal pump. The revolution of the grindstone, under those circumstances, would eject with a force proportioned to its rapidity, the water nearest the issues, whose place would in turn be supplied with water from the inflow at the center, which, in

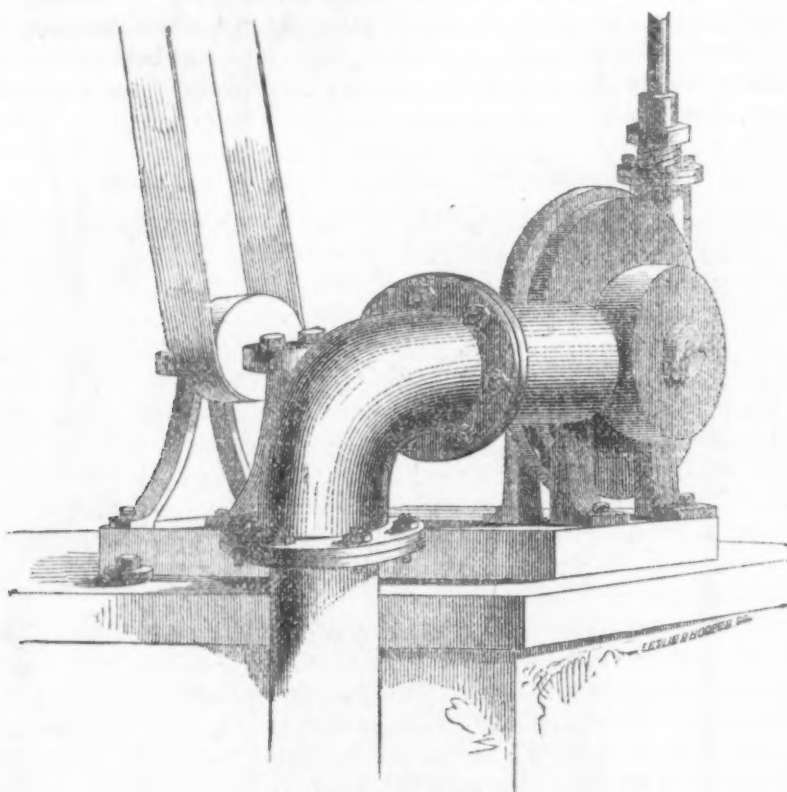


Fig. 3.

its turn, is ejected, and so on continually. In order to give to the water within the grindstone the full force of its motion, it would be necessary to have arms or veins within it, extending like radial lines from the centre to the circumference. If now, in place of a grindstone, we substitute a cast-iron disc, suspended upon a shaft with central openings, circumferential issues, and internal arms, as before supposed, we shall have the essential features of the pump. But thus far, we have only supposed the water thrown off the surface, and left to be scattered in wide profusion over the ground. To apply this profuse out-pouring of water to practical use, the disc or piston, which our hollow grindstone was made to represent, is encased in another of larger dimensions, enclosing it like a shell, and hence so termed; into this, of course, all the water is poured out, and as but one issue or discharge is provided for it here, it must, per force, seek that outlet. To this discharge a pipe is attached, and the water conveyed in any, or in as many directions as required. If the query should arise, how is the water forced into the disc at the central openings? the reply is, if the pump is placed below the head of the water, it will, of course, be kept full by the pressure of that head; if it be placed above the head, then it is first charged, that is, filled with water, which expels the air from the pump and pipe below; when set in motion, the water in the disc being thrown off, a vacuum is formed, into which the pressure of the external atmosphere forces the water from below.

The features of this pump, which entitle it to especial favor, are its simplicity, cheapness, portability, durability, and economy of power.

Destitute of valves, it is free from the liability to derangement, so objectionable in all other pumps; working with but slight contact-surface, a great amount of the friction, which, in other pumps, consumes so much of the ap-

plied power, is here avoided; the parts being all firm and compact, mud, gravel, and other matter passes through without injury to the pump.

Manufactured by the Union Power Company of the United States, 24 Broadway, New-York.

KING'S OSCILLATING RAILWAY WASHING-MACHINE.

This was invented and patented by Mr. Thomas King, West Farms, Westchester county, N. Y., and is exhibited by Mr. M. P. Coons, agent, Brooklyn. In its construction, it is both simple and substantial. It consists of a box, 24 inches square inside, and 10 inches deep, which rests upon a pair of cast-iron rockers, which also oscillate upon a cast-iron stand. The internal arrangement consists of a movable dash, perforated with holes, which, by its gravity, is made to slide back and forth, as one or the other side of the machine is elevated or depressed. The clothes are placed on both sides the dasher, the covers are closed, and the entire operation is performed simply by rocking the machine, by means of a lever attached to one side. A perforated board is attached near the ends of the machine, against which the clothes are thrown by its oscillating motion, and the weight of the slide, through which the water finds a ready discharge.

Hence, the process is twofold, consisting, first, of a repeated flow of water through the material to be washed; and second, of a sudden pressure from the weight of the slide, and of the clothes on its opposite side. Hence, the finest fabrics will not be in danger of being injured; and buttons, whalebones, &c., neither interfere with the proper action of the machine, nor are themselves liable to be broken. All sorts and kinds of fabrics may be devoted to this process at the same time, from the Marseilles-quilt to the muslin night-cap or lace-collar, and the machine "is warranted" to clean them all. It may also serve a good purpose in cleansing wool. The size above-described is competent to cleanse an amount equal to 25 yards of cotton sheeting. Twelve gentlemen's shirts, it is said, can be washed in the space of five or ten minutes. A mere child is competent to give it the motion required.

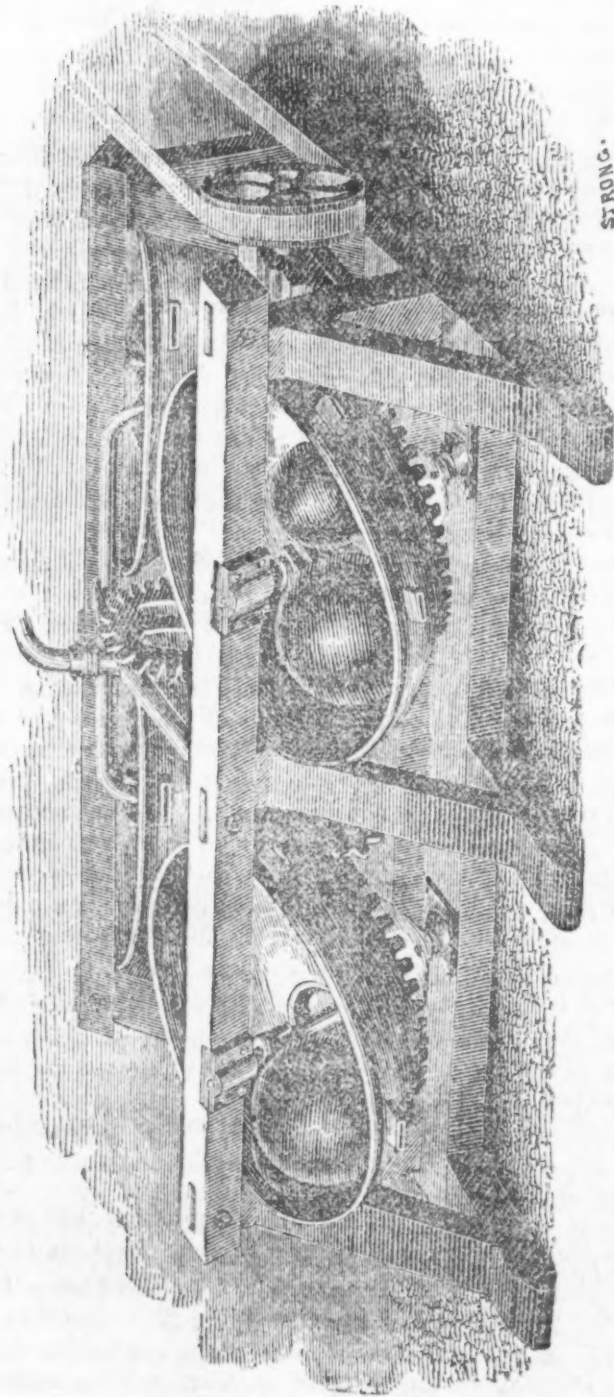
These machines have been in limited use for about two years, and those who have had experience of them highly commend them.

The proprietors claim for this patent a superiority over any other machine.

1. In cheapness and durability.
2. In the limited space it occupies.
3. In facility of working it.
4. In its facility of washing all kinds of fabrics, and without injury to their material.
5. In the space it occupies.
6. In the quality of its work, and the time required for performing it.

The machines are sold, at retail, for \$12. State and county rights are to be had on application to the agent, M. P. Coons, Brooklyn. Orders may also be addressed to Thomas King, West Farms.

BERDAN'S GOLD-QUARTZ PULVERIZER AND AMALGAMATOR.



BERDAN'S GOLD-QUARTZ MACHINE MANUFACTURING CO.,

No. 6 WALL STREET, NEW-YORK.

THE ABOVE ENGRAVING REPRESENTS FOUR MACHINES IN ONE FRAME.

The price of a machine will be \$3,000 for every basin with two balls, including the frame and gearing.

THE machine consists of a cast-iron basin, 7 feet in diameter, and 24 inches deep, the periphery turning up in a circle of 34 inches. This basin is secured to a wrought-iron shaft, which stands on an angle of 30 degrees from a perpendicular line, compelling the basin to revolve in a tilted or inclined position. The basin surmounts a conical or funnel-shaped cast-iron furnace.

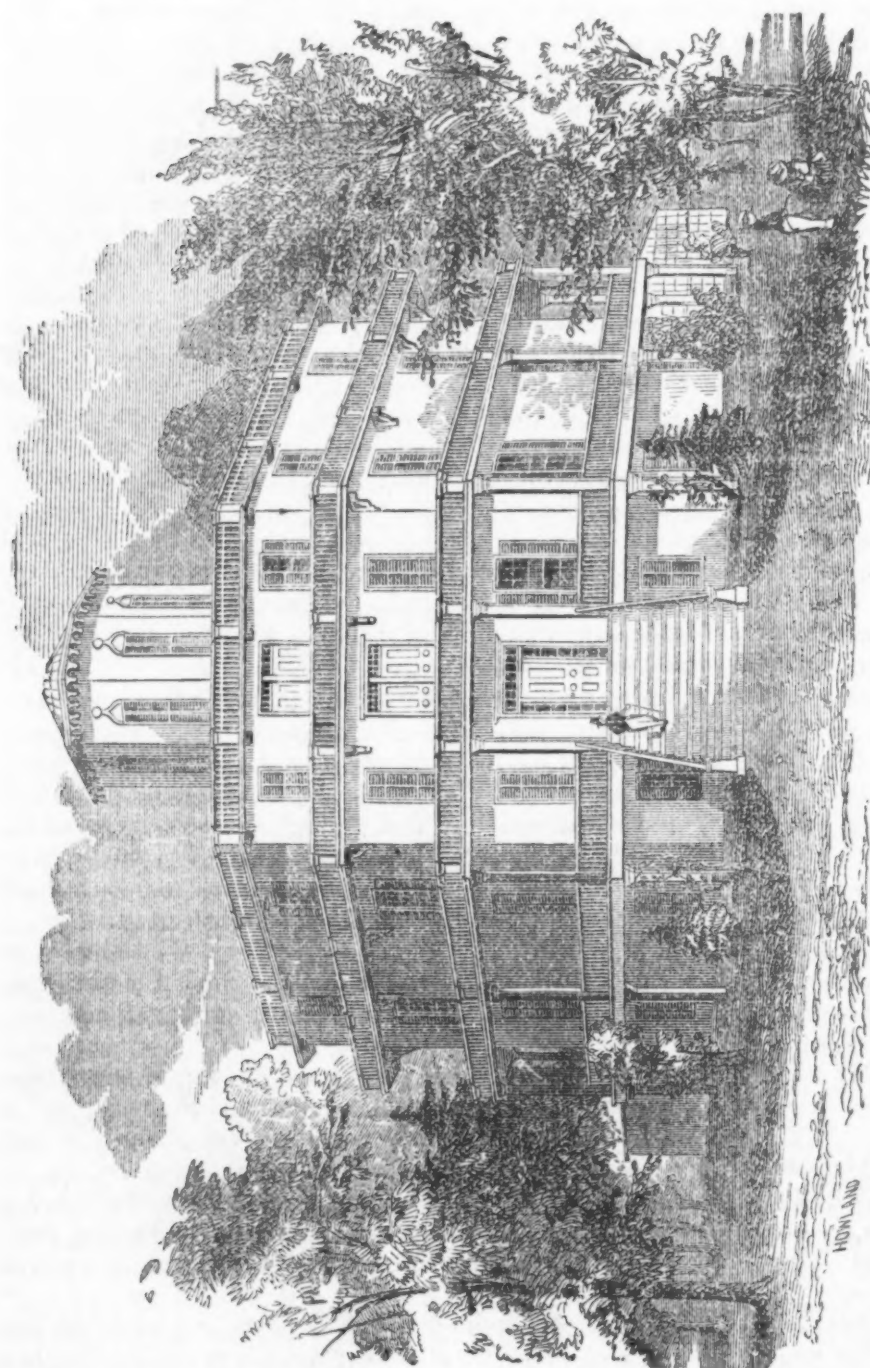
In the lower side of the basin is placed a cast-iron ball, 34 inches in diameter, and weighing 5,000 pounds. When the basin commences to rotate, the ball revolves by its own gravity, and remains at the lowest point in the basin, and has a grinding motion as well as the rolling or crushing movement. The ball fits the basin one quarter of the circumference of the ball. The small balls weigh 2,000 pounds. The frame is made of oak timber, 12 inches square, double tenoned, and bolted and braced in the best possible manner. The quicksilver is placed in the basin, and the incline of the basin compels the mercury to keep at the crushing-point of the ball. A small fire is kept in the furnace, while the machine is in operation, which keeps the bottom of the pan warm. The mercury being a conductor of heat, takes up the heat from the bottom of the pan, and is kept at a temperature of about 100 degrees. This greatly augments its affinity for the gold, and is produced at a trifling expense, and fully obviates the necessity of heating all the water, indispensably used in amalgamating and washing off the refuse matter. The balls pulverize the ore to an impalpable powder at the bottom of the mercury, thus bringing every particle of gold in contact with pure and warm mercury, and is amalgamated as soon as freed from the quartz; while the earthy matter, when sufficiently pulverized, rises in the water, by the agitation of the ball, and passes off as a sediment through screens which are placed over the openings in the side of the basin, near the top. The basin revolves in an opposite direction to the ball, so that all the ore in the basin is compelled to pass under the ball, while the water in the machine is sufficient to prevent the mercury from being broken up. The incline to the basin gives the ball its motion by its own gravity, which requires comparatively little power, and compels the mercury to keep at the crushing-point of the ball.

BALKY HORSES.

THE following mode of conquering a contrary horse is so simple, it is well worth the trial:

An East-India gentleman one day took his seat in one of the omnibuses, in London, but at the time of starting, all the efforts of the driver proved unavailing, owing to a balking horse attached to the vehicle. The poor animal became more and more restive in proportion to the tortures inflicted upon him by the driver, and several other whipmen who assisted on the occasion. The street became blocked up with spectators and the interception of other carriages. Great danger was to be apprehended. The East-India gentleman above referred to, suggested to the driver and his assistants, that if they would try the East-India method of fastening a cord to the horse's fore-foot, and cause a person to pull forward, the animal would start right away. The suggestion was received with contempt. However, after all other efforts failed, a long cord was attached to the animal's fore-foot, and the moment the man gave a strong pull, the horse started off as if nothing had been the matter. The philosophy of this case seems to be that the animal, thrown off the centre of gravity by the propulsion forward, is taken by surprise, and obliged to start.

THE GRAVEL WALL, AND OCTAGON MODE OF BUILDING.



RESIDENCE OF O. S. FOWLER, ESQ., FISHKILL, N. Y.

FOWLERS & WELLS have recently issued a work entitled, "A Home for All, or the Gravel Wall, and Octagon Mode of Building."

Its two leading features are the gravel wall, or, concrete mode, and the octagon form of building, applied to domestic architecture. It gives specific directions for selecting, proportioning, mixing, and depositing the materials,

erecting the requisite boxes or moulds, and putting on the outside finish ; so that, by following them, ingenious persons can erect their own houses, and fit them for occupancy almost without aid from mechanics—doors, windows, roofing, and plastering excepted. Especially, it tells the poor man, the *very poorest*, how to proceed to make a comfortable cottage at a trifling cost, except his own labor, of from \$30 to \$50, including a plan for *adding* to it afterwards, as time and means may allow, without losing the part first built, besides applying these modes to barns and out-houses. It also throws out numerous observations and suggestions, applicable to all forms and kinds of buildings ; shows how to make fixtures, greenhouses, flower-pits, chimneys, &c. ; makes some judicious observations respecting fruit-culture, and describes the board-wall and plank-wall plans, besides introducing the hexagonal form, and other miscellaneous matters of great practical value. Progress in building is just as possible as in other departments of human industry and comfort ; and our author has taken several steps in the right direction—that of *cheapening, bettering, and multiplying* human homes in general, and the laboring man's cottage in particular. All who intend to build, should give this little work a careful examination before commencing.

In building on this principle, the first object is to select the right *material*. And, fortunately, this abounds in some form on nearly every square mile of the earth's surface.

All that is wanted is stone and lime. The stone requires to be of various sizes, from tolerably fine sand, all the way along up to stones as large as you can well deposit in your wall. There must, however, be enough of the fine to connect the coarser stones together.

All that is required, is something *solid* for the lime to adhere to. The more fine sand you have, the more lime will be required ; the more coarse stones, the less ; and the more solidly the materials are compacted together, the thinner will that wall need to be. Probably the very best material will be found in those gravel knolls which abound throughout our country, which are composed of all sizes, from middling fine gravel, all the way along up to stones the size of the fist or head ; and wherever such a bank can be had, all required is to mix the lime with it, and throw it right into the wall.

The excellent engraving, at the head of this article, gives the elevation of the author's residence, and needs no explanation. The description of the accompanying ground-plan cannot be given better than in the author's own language :

"My house is located on an oval knoll, digging off the top of which, furnished me with nearly all the stones, large and small, used in putting up its walls. All my cellar, therefore, is *above ground*, except two holes, C L and M, alongside of my ice-house.

My ice-house consists of two stories—the upper one for ice ; the lower, a room, kept cool by the ice and its drippings, a preservatory for keeping fruit, butter, eggs, fresh meat, fish, bacon, pies, &c. Its structure is simple, and as follows :

• Erect studs as for a wall. Lath and plaster *both sides*, and finish the outside as you do your house. This furnishes a place for *dead air*—the best non-conductor in the world—superior, says Professor Silliman, to tan-bark, or even charcoal. In the plastering, use a little cement. Then erect another set of studs, first having nailed on your lath before they are raised ; then raise and fasten them, and plaster from the inside, or between the studs ; this gives two confined air-chambers. Then lath on the inside of these studs, and plaster, and you have three air-chambers all around your ice-house and preserva-

tory for both stories. Next, lay your floor to the bottom of your ice-house and top of preservatory, and make it water-tight, by caulking, or plastering with cement, or in some other way; and having this floor descend a few inches from the middle each way, so as to carry off the water, and resting this floor on rows of studs below, which serve both to support the ice and fasten shelves to, add to the outside row of studs, lath and plaster with cement, so that the ice-drippings may run off behind this inner wall of the preservatory, or between it and the two rows of studs above described. Your preservatory is now perfectly dry, and of one temperature the year round. Its bottom should also be double, so as to be dry, yet let water pass under it. In mine, the ice is gathered at the door, under which it runs through a lead pipe, bent upward like a new moon, which allows water to pass out, but prevents air from passing in. It passes into this cellar, C L, and my milk-closet, M, which also has two stories, the lower for preserves and what else we want to keep, yet do not think worth the trouble of going into the preservatory, and the top for milk, having two floors, which admits the cold air up into the milk-room, yet prevents the dirt from descending by the lower one catching it.

All required to make this floor is, having laid your floor-timbers, nail a floor to their under side, leaving a space an inch or two wide at one side, and a shelf over this crack will prevent much dirt from getting down; and then nailing another floor to the top of these timbers, having another opening on the other side of the floor.

M, for milk; the cold air passing up from the bottom story, into which the water runs from under the preservatory, both having shelves. A like arrangement at C L gives two large cellars, one above the other, on a like principle.

The entrance to my preservatory is with two stairways leading to it, one from the side toward the kitchen, for the cook; and the other larger, for the gardener to take down barrels of beef, fruits, and the larger articles. Thus, all the cold of my ice is saved, and cools five rooms, the preservatory and the other two double-storied rooms contiguous. Even the cold which escapes in opening the preservatory door, passes into these rooms, besides cooling the room marked A P, for apples, potatoes, &c.; and that marked K S, for kitchen-stores, both of which are fitted up with shelves.

In the closet, C, one angle, S, carries up a stove-pipe hole, made out of that very material described for making the wall, and drawing up, as you filled up, a round stick, the size of the flue desired—a cheap way of making chimneys, and as good as the very best. A wash-boiler is stationed in the adjoining room, W R, having a cistern, C I, 10 by 10—it can easily be made larger or smaller—which receives the surplus water from the cisterns above; and the roof having at one corner three straight walls, one of which extends from bottom to top of the cistern, made of this same wall-material, or of brick, and cemented both sides, having holes at the bottom. The other two are a foot or eighteen inches high, and say a foot on each side of the other, also cemented; and the spaces between them and the high wall filled in with charcoal and coarse gravel, so that the water, rising to this low wall, runs down through this filtering charcoal, through those holes at the bottom of the high wall, then up through charcoal and coarse gravel on the other side, and thus doubly filtered, makes the very best drinking-water in the world.

At the left of this cistern is a dark cellar, C, for sauce, or whatever you wish to keep from freezing; cool in summer, because excluded on all sides from the sun, and on the side joining the two-story cellar, C L, and the cis-

tern on another; and free from frost in winter, besides being easily aired by its two doors. And this airing of cellars is all-important, for, otherwise, decaying vegetables infect and poison the rooms above, by finding their way up through the floor. Still, the main body of the farmer's vegetables should be stored under his barn floor, so that he can drive his cart to the hatchway, and dump right into his potato, cabbage, carrot, ruta-baga, beet, parsnip, and other cellars or bins.

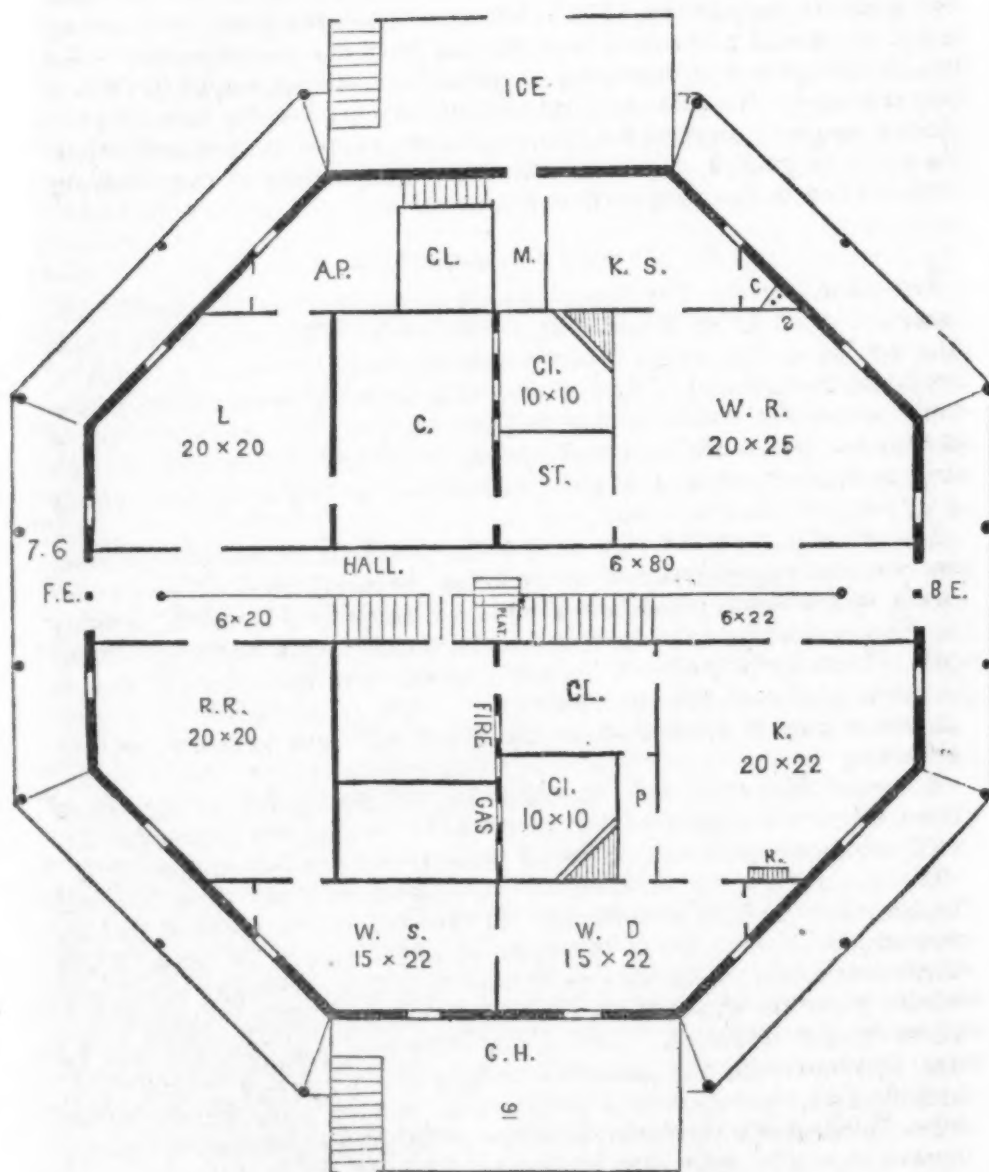
By the side of this is another room, L, which may be used for storing bedsteads, lumber, barrels, and such rubbish as garrets usually contain, tools included, with this advantage, that it is handy, and just where you want it, whereas the garret is very bad to get to and from. Or any other use can be made of it the proprietor chooses.

Between it and the wash-room, and at the end of the cistern, is a store-room, S T, some 7 by 10, just the place to put family stores, sugar, molasses, flour, pork, &c., also furnished with shelves and some drawers. A small closet off the apple-room, from which also starts another stack of chimneys, completes this, the north half of my house. How it would suit the reader, I care little, since it suits its planner and owner to a charm.

Next comes the entry. It consists of two parts. That line running nearly through it, and terminating in two octagonal pillars, is the central wall of the house, running from bottom to top; while the two walls on each side of it are for this story only, and are eight inches thick, while the middle one is a foot, and built like the outside walls. Tremendous pressure comes on parts of it, yet it stands. F E is the front entrance, where strangers will naturally apply for ingress to the house; and the room, R R, is for a common receiving-room, hat-stand, reading-room, &c.; and that pillar in the entry has an elk's head and horns, and some deer-horns masoned into it, on which to hang hats and cloaks.

The other side of the centre-wall is a through-entry; serves every purpose of one, and is just where you want it.

Passing through this entry, we enter the kitchen, K, the great stomach of the house. Two pantries, C L and P, connect with this kitchen and one another, and one with the adjoining room, W D. At the back end of the closet, C L, is a dumb-waiter, which goes from the bottom to the top of the house. Those angular stairways, erected on the angles of the ice and green-houses, and an off-set both for receiving in—there being an outside entrance to the ice-house here—and for landing from and entering the carriage, complete the main features of this story, which is submitted not to builders and men merely, but especially to women and practical housekeepers, for such approval or criticism as they may award it. That it cannot be bettered is not asserted, but that it is far superior to any basement arrangement before invented is maintained. And mark to what extent the octagon form contributes to this end. Building-reader, is not this plan worthy general adoption?"



GROUND PLAN OF O. S. FOWLER'S OCTAGON HOUSE.

GREAT NATIONAL CATTLE-SHOW.

To say that the State of Ohio is one of the most enterprising and efficient of all the States of the Union, is but to repeat what every body, who reads the papers, has long known. This efficiency is now actively employed, among its various onward movements, in improving its system of agriculture. We find, that the project of a national show has been strongly urged in some of their meetings. It would do good, unquestionably; but that it is the most efficient means of securing the end in view, we are not yet prepared to say. We are very glad, however, to extend greater publicity to the following, which we find in the *Cincinnati Commercial*:

STATE BOARD OF AGRICULTURE.

EDS. COMMERCIAL: The Convention of Delegates from County Societies assembled at 10 A. M., Wednesday, at Columbus. This is a meeting provided by law, and its special object is to fill the vacancies occurring by limitation, in the State Board of Agriculture. The assembly consists of the noblest sturdy sons of Ohio, tillers of her glorious soil, who have come together to consider and discuss the important interests of this great productive art, upon which so much of the wealth and prosperity of the State depends—a body of very highly intelligent men.

The call of counties was responded to by more than sixty. The first business was the appointment of a committee for nomination of persons for election to the Board. The Convention took a recess for dinner, after inviting Dr. Warder to address the meeting in the evening, upon some agricultural topic. It was anticipated that he would speak upon the culture of flax, or the use of plaster of Paris as a manure.

A warm time is anticipated, as the Board will have their acts severely scrutinized

THURSDAY MORNING, Dec. 8.—After Dr. Warder's paper on the use of plaster, which was listened to with attention last evening, the Convention discussed some resolutions and reports of interest, until the final adjournment.

The report upon the memorial of the originators of the Great National Cattle Show, to be held at Springfield, O., was not met in the most friendly spirit imaginable, by a few of the members of the Board; by others, it was warmly sustained. The latter argued, that so far from interfering in any way with the State fair of next year, it would probably contribute largely to the success of that exhibition. After a free discussion, the memorial was, by leave, withdrawn, and the enterprising citizens of Clark county determined to claim the higher prestige of the great national body of agriculturists, known as the *United States Agricultural Society*, to whom a paper was immediately directed, signed by most of the members of the Board of Agriculture, and members of the Convention, highly lauding this great enterprise, and asking the support of the national body.

The Agricultural Convention, on Thursday morning, elected the following named gentlemen members of the Board for the ensuing two years:

R. W. Musgrave, of Crawford, President.

James L. Cox, of Muskingum, Secretary.

Jos. Sullivant, of Franklin.

Buckley Steedman, of Cuyahoga.

J. K. Greene, of Hamilton.

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Some very interesting discussions then ensued among them. That upon the important subject of *hedges* excited a very spirited talk, and elicited much valuable information. The practical knowledge and experience of those who knew the subject under discussion through actual acquaintance, was beautifully contrasted with the empty denunciation and cries of humbug, from those who were forced to admit the want of experience and practical knowledge.

The Convention will probably adjourn to-day, perhaps this evening, after hearing a paper upon *flax and flax-fibre*, which, it is understood, will be read by Dr. Warder, who has been investigating this subject.

It is generally supposed that the next State fair will be held in Zanesville, despite the limited accommodation for such a crowd as should attend such a meeting, and notwithstanding Cincinnati stands ready to make up a grand show, is accessible, and can accommodate all who may come.

DIGGING WELLS IN QUICKSAND.

A CORRESPONDENT, in the *Genesee Farmer*, communicates the following valuable information in reference to the best mode of digging wells in quicksand. He says:

"Thinking that it may be of importance to some of your readers, I will give some of my experience in digging wells in quicksand. My father was digging a well where the quicksand ran in so bad, that he was led to contrive some way to remedy the evil resulting from it. His plan is, (when you get down where the sand runs in so as to prevent working at advantage,) to make a platform to lay the wall on, out of plank, by pinning them together; place this on the bottom, and then lay a wall of good hard brick and water-lime. When you get above where there will be any danger of the sand caving in, you can go on and dig the well as deep as you please, and the wall will settle down as fast as you take out the sand under it. We have settled a wall two feet, after it had stood for years. I was led to send this from hearing of the difficulty they had in digging wells at Geneva."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CURE OF ANIMALS.

MESSRS. EDITORS:—I give you a recipe for the diseases of horses and cattle. It is used by our farriers for bruises, sprain, ringbone, spavin, and wounds, particularly on horses, and they use it on the human species. They *design* to keep it private.

- R. One pint strong alcohol, 50 per cent. or over.
- One half ounce blue vitriol, pulverized fine.
- One ounce camphor, pulverized.
- One ounce sal-nitre, pulverized.
- Two ounces tincture myrrh.
- Two ounces aqua ammoniac.

Add these to the alcohol: *mix well*: stand twelve hours, shaking frequently: keep the bottle well corked. Then add half-pint spirits turpentine. Must be shaken when used, or turned from the bottle, for the turpentine will not unite with the alcohol.

ARIEL HUNTON.

Hyde Park, Vt., October 22, 1853.

PIGS AND TURNIPS.

A VERY judicious paper, with the title given above, written by Mr. H. F. French, of Exeter, N. H., appeared in the *New-England Farmer*, for December. We commend it to all our readers. The culture of roots was often dwelt upon by the late "Farmer of Marshfield," and a large quantity was annually gathered for the use of his elegant herd of cattle. Mr. F. says:

If we could only discover some mode of keeping a large stock of swine on our farms, near good markets, so that we could make plenty of manure, and yet sell our hay, the question of how we can live by farming, in this part of New-Hampshire, would be answered. When hay is worth but ten dollars a ton, steers and heifers will consume more of it than the worth of their bodies, at three years old; but our farmers are too far-sighted, and have too much honesty to take from the soil without returning an equivalent; and, so many of them work all summer to collect food for their cattle in winter, and in the spring, have only their cattle left, increased in value not one-half the value of their winter's food.

Most of us have seen this to be folly, and tried keeping swine, and when potatoes could be raised for ten or twelve cents a bushel, we could raise pork to some profit, at prices lower than the present.

But potatoes are not to be named, in these days, for such base uses; and the question whether *corn* can be used with advantage for feeding swine has been very nicely tested. Perhaps with corn, at a dollar a bushel, and pork, at six cents a pound, the farmer may get the labor of the swine for his trouble, and *perhaps not*.

One thing, every farmer knows, who has tried it—that a dozen half-grown porkers will demolish his handsome cribful of a hundred bushels of corn, which it cost him so much hard work last summer to raise, in a painfully short time, and the golden ears are so beautiful, that one can hardly have the heart thus to "cast pearls before swine." I think a farmer feels rich so long as he can show his neighbor his corn-barn filled up above his head all round with this substantial treasure.

Are turnips good for pigs? Are pigs any the better for turnips? One man said turnips were good for nothing for any *critter*; for one of his neighbors, last winter, fed out a cart-load to a yoke of oxen, without doing them the least good in the world. Another said, turnips were first-rate for fattening cattle, because he tried it last winter, on a yoke of oxen and a cow, and he never saw animals gain faster. A third had tried it on pigs; and they ate the turnips well enough, and in great quantities; but he was convinced that they ate just as much meal *with* the turnips, as when kept on meal alone, and that the turnips were a total loss.

I had three shoats in September, one a full-blood Suffolk, one a half-blood, and one a native American, from a drove. I had also a crop of white flat turnips, sowed with my grass-seed in July, which cost me nothing but the trouble of picking up. For the past six weeks, I have fed these pigs with the turnips principally. We boil in a portable boiler, out of doors, two bushels of turnips at once, until they are soft, then take them out and put them into a barrel, and add a pailful, about ten quarts, of coarse shorts, and mash them together hot, adding a handful of salt. We have slops from the house, not quite enough to keep one of them; and these, with two kettlefuls of the boiled dish, last them one week. I never saw pigs thrive better. They

are getting too fat to be kept over the winter, and two of them are in danger of an early death. From this single experiment, it would seem, as if a bushel of turnips is worth as much for swine, as the same quantity of potatoes; but it is not time to draw that conclusion. Many farmers have turnips on hand, and I hope the experiment will be thoroughly tried, so that if results be favorable, we may all lay down our land in July and August, with grass-seed and turnips, sell part of our hay, and keep the homestead in good heart, by raising swine at a profit. My ruta-bagas, which will keep good till spring, will many of them be turned to the same account. I have another old porker, which fed on turnips until within a month, but as he was expected to aid the festivities of Thanksgiving in the house, it was thought best to put him on a corn-meal diet.

It is said in the "Complete Body of Husbandry," published in England a hundred years ago, that sheep fattened upon turnips, should be fed on other food two weeks before they are killed, or the mutton will taste of the turnips. It probably would be prudent, for those who prefer their pork and turnips on separate dishes, to attend to this hint.

The *Genesee Farmer* has a notice of an article from the *Irish Farmer's Gazette*, in which an experiment was tried of feeding swine upon turnips, both cooked and raw, by which it was found that the pigs all gained remarkably well, but that they ate *twice as much* of the cooked as of the raw food, and gained most on the raw. The raw turnips were "pulped" or grated, and allowed to ferment.

Let us have the experiment tried, and reported in the *New-England Farmer*. I think the value of turnips is by no means appreciated in this country. It has been said that "the national power of Great Britain has its root in the turnip." It is there, *the great crop*, for fattening cattle and sheep, and so maintaining the fertility of the soil.

Exeter, N. H., November 17, 1853.

GAS-LIGHTS; RECENT ENGLISH PATENT.

AMONG the recent patents secured in England for the manufacture of illuminating gas, one of peculiar merit, in some respects, was by Mansfield. This was somewhat comprehensive in its claims, and was, no doubt, a very valuable discovery when viewed in connection with the prevailing modes of manufacturing gas.

We have been not a little surprised to find how extensively men have been engaged in experiments on this subject. In a visit to Baltimore, we found a very ingenious friend, who had been making experiments, though unhappily in a wrong direction. A letter of inquiry from a gentleman in Maine states that he has been experimenting in connection with benzole, while a third states substantially the same thing. Many others have made similar experiments. We have also been apprised of the fact that a Mr. A., for some months in Boston, and afterwards in this city, had induced some capitalists to invest considerable amounts in perfecting his "discovery," which terminated, like the rest, not in flame, but in smoke; and even now, perhaps, there is yet another who is, or at least, has been engaged in trying to work out the same great problem; while both these last were led on by having obtained some imperfect knowledge of what is and was already secured by patent. These both use benzole, we understand, though not in a pure form.

It is a very easy thing to make even a bright flame by the use of different hydro-carbons, but the flame is, unfortunately, too often accompanied with smoke. The common camphene-lamp consumes a liquid very like to benzole, to wit, rectified spirits of turpentine. But, arranged in the best possible manner, the soot which these lamps scatter over every foot of the apartment in which they are used, is a serious offset to their brilliant flame. The explosive nature of these fluids is also too often confirmed by actual experiment, to allow them a quiet and uninterrupted popularity.

But we propose now to give some information of a more particular character, though connected with all these modes of illumination.

In the distillation of coal-tar, products are obtained of various character, namely, ammoniacal water, heavy oils, and light oils. Among the first products are the light oils. Naphthaline is also obtained, which is an oil at ordinary temperatures. Some of these crude oils are acid in their character, and others are alkaline. Among the former are carbonic, rosalic, &c.; and among the latter, aniline, picoline, &c.

The neutral oils are hydro-carbons. Among these last is benzole. This substance boils at 80° temperature, and becomes solid at or near 0. It forms nearly or quite one-eighth of the light oil obtained from tar. In volatility, it is nearly equal to alcohol, but it is more allied to ether. At ordinary temperatures it yields so much of its vapor to a stream of air passed through it, as to cause it to burn with a white flame, till the vapor is entirely volatilized.

In the patent secured by Mansfield, the first claim set up, and allowed, was the manufacture, from "bituminous matter, of spirituous substances, so volatile, that a current of air, passed through them, may continue to burn, after once ignited, with a luminous flame, till these substances are consumed."

So far, this patent covers the same ground with the American patent, described in our November number.

The second claim related to substances of value, but not for the purpose of illumination.

The third claim secured by the English patent under consideration, had reference to the manner of avoiding the presence of smoke. On this, the English and American patents essentially differ. Mansfield says: "It is necessary for my purpose that the spirits should be as free from water as they can be obtained, consistently with cheapness, because the less water the spirits contain, the more of the hydro-carbons they will dissolve."

In the American patent, this entire absence of water is not essential, nor even desirable. If water is present in too considerable quantities, the brilliancy of the flame is diminished; and, on the other hand, if too great a proportion of benzole is used, there will be more or less smoke. But we have diluted this benzole-mixture with water, more than once, and without witnessing any unfavorable results.

There is another point of difference in the two patents. The mixture used by Mansfield was not competent to the use for which it was designed, unless it was kept at a tolerably high temperature.

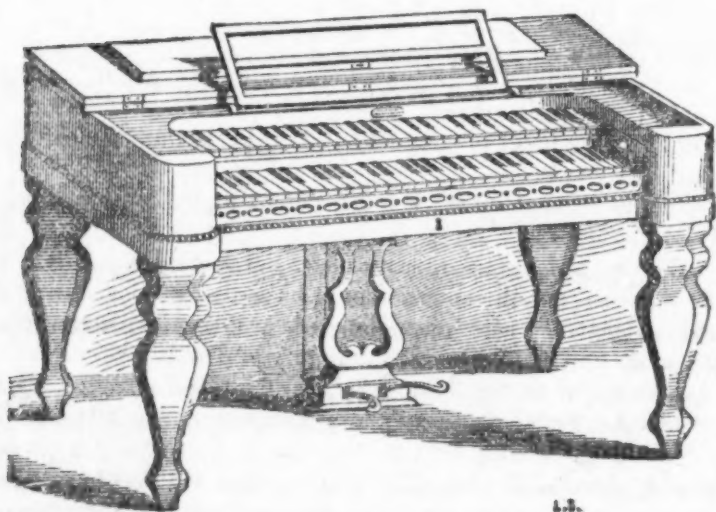
It is true of all gases obtained from these substances, that their illuminating power is essentially diminished by cold. Who has not seen and marked the dimness of street-lamps in all our cities, on a severe winter night? An eminent chemist has found, by the most carefully-conducted experiments, that the illuminating power of coal-gas is decreased three-fourths, when reduced to the temperature of 20° Fahrenheit.

The gas of which we speak is similarly affected by reduction of temperature. But the minimum temperature at which its light is quite satisfactory,

is much lower than that manufactured by Mansfield's patent. It has been burned side by side with that gas; and when the latter was actually extinguished, that of the American patent continued to burn well, though with a brilliancy somewhat diminished. This gas, indeed, requires a moderate temperature, but the degree of heat most desirable may be very conveniently secured in every dwelling-house.

In burning benzole, as above implied, there are two extremes that are to be avoided; namely, on one side, so diluting the benzole that the humid air will be too slightly impregnated with illuminating power; and on the other, too concentrated a form, by which the atmospheric air will be so fully charged with carbon, as to evolve it, unconsumed, in the form of smoke. A third point also must not be overlooked. Benzole diluted with water alone, for example, mingles with it, but is not so thoroughly dissolved in it as to secure a satisfactory result. The light may be dim, and at the same time it will be accompanied with smoke. Hence, while exact proportions among the several fluids here combined are not required, it is necessary that such should be used as will thoroughly dissolve the benzole, and at the same time, dilute it to a condition in which all the carbon absorbed by the current of air, shall be completely consumed in its own flame.

MELODEONS.



GOODMAN'S PATENT.

OUR readers may not all be aware of the perfection to which the melodeon, by means of various improvements, has been brought.

It has been a great point with builders of these and other reed instruments, so to combine two sets or *banks* of keys with two or more *stops* or sets of reeds, that the effect of more than one bank of keys, so prominent in organs, may be produced in these smaller instruments.

Mr. Goodman, of New-Haven, has accomplished this. He connects two banks of keys with two sets of reeds by direct application or connection, so that both sets of reeds may be played by the lower bank of keys.

The two banks of keys are arranged, as seen in the cut, one above the other, in the usual way. The improvement consists in using two sets of reeds and

two sets of valves in such a manner that each set of reeds may be played by its own bank of keys, independently of the other set, or both sets of valves may be played by the lower bank of keys. Thus, as on an organ, both hands may be applied to the lower bank of keys, playing either one or both sets of reeds, or one hand to each bank of keys, each playing one set, or the lower bank playing two sets at pleasure, by which means greater force and variety are secured than this instrument has before possessed. From the simplicity of this connection of the parts by the use of the coupler, the price is comparatively but little increased.

For small churches or the parlor, the improved melodeon may well supply the place of the organ and other instruments.

EDITORS' JOTTINGS, AND MECHANICAL RECORD.

JULLIEN'S CONCERTS.—The people of New-York have had as great a treat of instrumental and orchestral music the past season, as they had in the last season, of operatic, from Madame Sontag and her troupe. Jullien's music is unrivaled in his department, as Sontag's, in hers. But Madame Sontag is entirely unlike Madame Alboni, and in some respects, the latter has no equal. So Jullien is unlike every body but himself, and, in some respects, is without a rival. But what is that which constitutes the wonderful charm of these concerts? We answer as follows:

Mons. Jullien has collected, from different parts of Europe, several of the most eminent solo-performers. They are not merely "good," or "excellent," or "very fine," but they are really *superb*, *wonderful*. On the cornet-a-piston, perhaps on the whole family of horns, Herr Koenig seems perfectly at home. He is, in this department, what Strakosch and Jaell are on the pianoforte. He does just what he chooses to do, and without apparent effort. Signor Bottesini, on the contra-basso, or double bass—who in this country ever heard the like? Very few will believe us, or give sufficient meaning to our words, when we say that he performs the different airs of the operas on that huge, awkward instrument, with all the exuberance of florid ornament that we have elsewhere heard upon the violin or the flute. His execution is in all respects absolutely wonderful. Herr Lutgen is equally at home on the violoncello, or bass-viol. His few appearances as a solo player have excited the highest enthusiasm.

Again, the flute of M. Reichert is inimitable. We have heard fine playing before, but we have heard nothing that compared with this. Indeed, M. Reichert is probably the second, if not the first flute-player in the world. The Brothers Mollenhauer are equally eminent on the violin; while Messrs. Lavigne, on the oboe, Wuille, on the clarinet and corna-musa, Hughes, on the ophicleide (a monster instrument) and Collinet, on the flageolet, are all superb. Here we have sufficient to explain the attractions of these concerts. But this is not all.

The presence of such performers inspires those of far inferior merit, in the same orchestra, and thus the seventy or eighty performers, most of whom we have perhaps often heard before, seldom or never played so well, in the chorus. But there is still another agency.

No conductor we have seen seems to inspire enthusiasm as Jullien. Others may know as much, and may be as good critics; but he has, and imparts to his choruses, an excess of animal electricity. He is but a bundle, a ganglion of musical nerve—nerves, not of sensation, but of the sensation of *sound*. So long as such a man has the confidence of those associated with him, he has immense power over them.

Again, Jullien's music is peculiar. We never had such styles brought out. We have had as good, and in our opinion, much higher styles; but this is novel and "striking," and has proved a decided *hit*. If we were to hear instrumental

concerts for ninety successive evenings, we should prefer the beautifully rich strains of the Boston Germanian Musical Society. Mons. Bergman, and his little corps of twenty or thirty instruments, are unrivalled on this continent, not only for their classical elegance, but also (considering their numbers) for their efficiency. But they get up no tornadoes, no earthquakes, nor even the dialogue of the Katydids, nor target-shooting. But these are Jullien's every-day performances. True, he *can* do any thing well. He has sometimes given us true artistic musical treats, but he does not thereby secure the bursts of applause that he requires. "The public" in New-York are not sufficiently cultivated to be excited to enthusiasm by such entertainments.

The vocal performances at these concerts are and deserve to be very well received. Anna Zerr often sings very sweetly. She has wonderful compass of voice, and her lowest notes are peculiarly smooth and strong.

We do not say that these concerts deserve the attention of the public, but they have that power, that uncontrollable influence over the popular mind, that compels attention to such various and wonderful harmonies.

DE SOTO, Powell's great picture, now on exhibition in Broadway, receives the unqualified approbation of amateurs and of true artists.

THE CHINESE MUSEUM is very highly spoken of, but we have not had the pleasure of seeing it.

SIGNOR BLITZ is still here, astonishing crowded auditories with his magical skill, and amusing them by his wonderful spirit-rappings. The stranger who visits New-York, is quite unprepared to take leave of the city and its lions, unless he has seen Signor Blitz. There is but one Blitz, as there has been but one Napoleon.

MAX MARETZEK has just closed a series of operas, in very superior style. The Prophet and Massaniello have been brought out for the first time, we believe, in this country, and were very successful. Mons. M. has and deserves the reputation of a very efficient manager and conductor.

SILVERING ALL SORTS OF METALS AND GLASS.—A patent has been recently issued in Paris for the process above-described, of which the process is described as follows:

He takes 1 oz. of crystallized nitrate of silver, dissolves it in twice its weight of distilled water, and adds $9\frac{1}{2}$ per cent. by weight of nitrate and liquid ammonia. He then adds six times the weight of the nitrate of silver, of spirits of wine, agitates the liquid, and adds 15 per cent. on the whole volume of resinous spirit (composed of one part of resinous matter by preference, gum galbanum, to five parts of spirits of wine.) The liquid is then left to settle, and filtered, after which it has added to it nine times its quantity of spirits of wine, with the further introduction of 8 per cent. of liquid ammonia, and a quantity of spirits of wine equal to its whole volume. The solution will then contain about five parts of nitrate of silver to 1000 parts of liquid. The liquid thus prepared and filtered may be used immediately in connection with a galvanic battery, in the manner usually practised by platers, but it is better to let it remain quiescent for some time. The anode or thin sheet of silver in connection with the positive pole, acts perfectly in this liquid, and gradually dissolves in the bath; the deposition commences immediately on the objects to be plated being introduced into the bath, in a white and brilliant form, and the thickness of coating can be regulated at pleasure. To insure its more perfect adhesion, in certain cases the metal may be first passed through a solution of nitrate of mercury. When glass is the material to be coated, a thin film of silver is previously formed on it, by adding to the liquid a few drops of spirits of cloves in a separate bath, and the quantity of ammonia used in preparing the bath is only from 2 to 8 per cent. By precipitating copper on the silvered glass, and then detaching the two metals, plates may be produced suitable for daguerreotypic or photographic purposes.

PLUMBIC ZINC—A NEW COMBINATION OF METALS.—We learn from the *London Mining Journal* that Messrs. Morewood & Rogers, of Upper Thames street, have recently patented a combination of lead and zinc, under the name of "plumbic zinc." It consists of distinct layers of each metal, perfectly united in a peculiar process of manufacture—one side thus presenting a surface of pure lead, the other pure zinc, combining the stiffness of the latter with the durability of the former. A sheet of metal is thus produced which proves as hard and durable as one of lead several times its thickness and weight; while in peculiar situations the zinc is laid undermost, and is thus protected from atmospheric actions, or the effect of acid vapors or liquors, by the preservative power of the lead. For every description of roofing, hips, and ridges, gutters, pipes, cisterns, sinks, &c., this metal will most probably be found highly advantageous. For covering terraces, balconies, stairs, and passages, it will be found similar to lead under the feet; while the stiff lining of zinc will prevent it from treading out of shape. For chimney-tops, cowls, &c., the lead is placed inside, which is indestructible from the sulphurous acids and vapors usually contained in smoke. For coal-boxes, baths, pails, and many other domestic utensils, it will also be found highly useful. Japan will adhere to it as well as to iron plate. It will solder as effectually as tin plate, and works softer and with greater facility than sheet zinc alone. It is also recommended for lining tunnels, sheathing ships, &c.; and no doubt numerous other uses will yet be found for it. The government authorities at Melbourne have contracted for a given period to secure the entire quantity which may be exported to Victoria, for flooring and roofing many of the public and private buildings erected in that city.

TRAVELLING HOTEL.—A Paris correspondent of the *Cincinnati Gazette*, in a letter, dated August 11, gives the following account of a novel mode of travelling in France. He writes:

"If we are in advance of all the world in sea yachts, the French have beaten us in the article of railroad yachts. A rich capitalist, Monsieur the Count of L—, has invented and superintended the construction of a railroad hotel, for his own private use, with which he intends to travel with his family over all the railroads of France. It is a complete house, with all its dependencies, principal and accessory. There is a parlor, bed-rooms, with beds, billiard-room, kitchen, office, a cellar which will hold a good store of wine, ice-house, &c.; in one word, all the elegance and the comfort, the useful and the agreeable, of a dwelling, the most complete and the most rich. It is very long, and like all French cars, very wide. It is made so that it can be transferred from one set of wheels to another, though that seems of no importance, since the roads of France are all, I believe, of the same wide gauge. This travelling-hotel has cost its proprietor about 50,000 francs, and is at this moment attracting great attention at the depot of the Orleans railway.

FRANCIS' NEW PRINTING-PRESS.—While in Springfield, attending the State Fair, we saw in operation the new power-press invented by Allen Francis, Esq., of the *Springfield Journal*. It is certainly a very ingenious machine, and yet in its construction it is very simple. The rollers are fastened on an endless chain, which is made to revolve to ink the forms perfectly. The impression is taken nearly in the same manner as with the Adams Press, though the bed is raised by a cam instead of a lever. There were several members of the Press present, all of whom seemed highly pleased with its performance. Though propelled only by man-power, it printed at the rate of two thousand an hour, and did its work well indeed. Mr. Francis told us it cost him only about six hundred dollars. This is a most important lessening of the price of a power-press, as one made in the usual manner would cost twice that amount at least. We wish Mr. Francis abundant success in his efforts to cheapen knowledge for the people. The facilities for carrying out his invention were not very good in Springfield, but in the hands of a first-rate machinist, we see not why the press may not be made a very beautiful machine, and its simplicity and cheapness certainly recommend it very strongly for general adoption.—*Chicago Dem. Press*.

CAST-IRON INTERIOR WALLS.—L. A. Gouch, architect, Harlem, N. Y., has plans for cast-iron partition walls, which he thinks far superior in every respect, and can be put up for less than those of brick. They are formed of perforated plates bolted together, each of about one sixth of an inch in thickness, and secured so as to make a partition of four inches in thickness, having an air space between, which will answer for ventilation, gas-pipes, water-pipes, and hot-air pipes. These plates can be covered with plaster, and made to resemble a hard-finish wall. These partitions will be fire-proof, and flanges are cast upon them for joists and beams of flooring and stairs. Such a partition can be taken down at any time, by merely unscrewing the bolts, and not like brick, mortar, and lath walls, it will be as good as ever, and can answer the same purpose a thousand times over, and last for a thousand years. The application of iron to architecture is an invention which should attract universal attention.

NOVEL LOCOMOTIVE.—There has been just completed at South Boston, a locomotive called the "Texas," constructed on a most novel design, and intended, it is thought, to work an entire change in the manner of making locomotive engines. It weighs about thirteen tons with the tender which is connected with it, the boiler and tank being placed on the same frame. It has but four wheels, and those are hollow drivers, and are placed one pair in front of the boiler, and one pair under the tank. The cylinders are twelve and a half inches in diameter, and are outside connections. The power, instead of being applied directly to the drivers by connecting-rods, as is usual, is applied to the top of an upright beam placed just in front of the fire-box on either side of the boiler. From the top of this beam, which moves about 15 deg. on a heavy pivot, runs a rod to the back driver, and from the bottom runs a rod to the front driver. The boiler sets quite low, while the tank hangs below the wheels. The link is also of most novel construction, and is said to be a most important improvement, the link working within the block, instead of the block within the link. As no patent has been taken, or is intended to be taken, leave has already been given to other manufacturers to adopt this link, and it will probably come into general use.

The advantages derived by this novel construction of the locomotive, are the ease with which great power can be applied, and the great gain made in bringing the whole weight of the engine and tender to aid in drawing a heavy load. It is said that a thirteen-ton engine built on the new model, can do the same work as a twenty-ton engine built so that the power is applied to the drivers at the fire-box. The result will, of course, be a great diminution in the expense of procuring motive power for our railroads. The design, as we have before remarked, is wholly original, nothing of the kind ever having been attempted before.

The locomotive just completed is for a road in Texas. There are also in process of construction four others after the same model, intended for a road in Pennsylvania.

With a view of testing the capabilities of the engine, "Texas" was attached to a heavy freight-train consisting of fourteen long cars. It drew them with the greatest ease from South Braintree to Boston, making the time allotted to the train to a second. This train, which is one of the heaviest on the road, is usually drawn by a twenty-five ton locomotive. The result of the experiment is deemed conclusive that the locomotive will prove in every respect successful, and that a twelve-ton engine can, when built after the new plan, do the work of a twenty-ton engine of the old model.

GRAIN HARVESTERS.—J. Faber, of Farmer's Hill, N. Y., has contrived an improvement in the mode of hanging the cutter-bar to a swing or balance frame hung loosely upon the axles of the two wheels, whereby the cutters may be elevated above the ground sufficiently to pass any obstruction which may interfere, or to pass inequalities of surface; two sets or series of cutters are employed upon two cutter-bars, and the teeth being triangular or saw-shaped operate like shears upon each other. The cutter-bars are thrown in and out of gear with the driving-wheel by a very simple arrangement placed upon the top of the balance-frame, which is under the control of the driver.

MINERALS IN NEW-MEXICO.—We have in our possession two specimens of ore from the *silver mine* near Dona Ana, which is now being worked very successfully by Mr. Stephenson, though without that outlay of capital which is necessary for the large product that is yielded by many of the mines of Mexico. We understand that, by different channels, a large number of similar specimens have been sent into the States, with a view to analysis by competent persons. Of the results of this analysis, those interested in the mines have no doubt, for the reason that they have a practical knowledge of silver-mining, and are actually by the rudest process extracting considerable quantities of the metal from these ores. The chief object had in view by them and others in New-Mexico, who have sent in these specimens is, that capitalists in the States, being satisfied that there are rich silver mines in the country, may have their attention turned to it. The range of mountains where this ore is found, is quite extensive, and no doubt exists among persons well qualified from their knowledge of the silver mines of Mexico to judge in this matter, that these mountains are stored in great abundance with this precious metal.

Besides these specimens of silver, we had shown us by Maj. Greiner, a quantity of quick-silver, weighing nearly a pound, which had been *scooped up* at Los Truches, near the Del Norte, about forty miles north of Santa Fe. This metal is found in globules and sometimes in little pools near the surface, at the roots of shrubs, or on the earth in damp spots, underneath the rocks and stones of the neighborhood.

The mineral wealth of New-Mexico, as we have again and again contended, is greatly undervalued. The estimate put upon that territory by our countrymen does no sort of justice to its resources. A railroad through it would develop those resources to an extent which, if predicted now, would be believed by nobody, save those who have been in the country and impartially examined it.—*St. Louis Intelligencer*.

RAIN STATISTICS.—The following statements are derived from the tables of a careful and accurate observer, in this city:—The quantity of rain which fell in August was greater than that of any other month for the past twelve years. Since 1841, the average quantity of August has been 4 inches 54 hundredths. The least quantity was in August, 1848, being then 2 inches 50 hundredths; the greatest quantity, in August, 1853, being 10½ inches; and the next greatest quantity was in November, 1845, being then 10 inches. The whole quantity of rain this year, thus far, is 33½ inches. The greatest quantity for any one of the past twelve years was in 1850, when it was 55 inches 3 hundredths. The smallest quantity, 1844 and 1846, when it was about 34 inches, 56 hundredths.—*Salem Gazette*.

MANURE FOR AUTUMN ROSES.—Mr. Rivers, a famous Rose Culturist, applies a mixture of wood-ashes and guano, in the proportion of half a peck of guano to a bushel of ashes, to his late roses, with most excellent effect. About two quarts of the mixture is applied to each shrub or tree, in a circle eighteen inches in diameter around the stem, where it is suffered to remain undisturbed until autumn. It should be applied early in June, and covered with a thin grass mulch, and the effect will be that it will retain the dew and showers, and keep the tree in constant and vigorous growth, which is very necessary to the production of a good crop of flowers in the fall.

MANUFACTURING GLOVES.—Two inhabitants of Grenoble, in France, about the same time invented a machine for sewing gloves, but instead of competing with each other, they agreed to unite the advantages of each invention. One found means to sew mechanically the fingers of gloves, while the other, after sewing the remainder of the gloves, was compelled to employ operatives to sew the fingers. The inventors by combining the two machines, have produced one which sews the gloves perfectly. This discovery has produced a great sensation at Grenoble, where the manufacturers were not able to supply the demand for want of a sufficient number of operatives.

THE *Zanesville Times* states that the wool clip of Licking county, Ohio, this year will reach 500,000 pounds, the average price of which will not be less than 60 cents a pound, making an aggregate of about a quarter of a million of dollars for the wool clip of a single county.

NEWELL'S AROMATIC BURNING FLUID.—"It was the remark of Baron Liebig, that the greatest discovery which chemists could make, would be the solidification of coal gas, so that it could be formed into candles, and burned from stands. With all due respect to this illustrious chemist, we think that the American public would hardly retrace their steps, and adopt the *dips*, even if they were told that they were from pure gas. It is significant of the directness in the application of knowledge in this country, that leaving the notion of the solidification of gas to its suggester, Mr. John Newell, of this city, has been able, after a year of careful experimenting, to combine the elements of illuminating gas, so as to produce a *fluid*, adapted to the safety lamps, or spirit lamps, generally used. In this he has accomplished what has been the aim of every inventor, namely, the diminishing of the inflammability of the compound. Consequently, the danger in the use of burning fluids is thus generally diminished, and taken in connection with his admirable device of a safety lamp, we cannot but regard Mr. Newell as a public benefactor. We have good authority for the statement that the new fluid contains *one-sixth of its volume of water*, and that instead of highly rectified and volatile alcohol, the illuminating material is burned in a column of watery vapor. Referring to the advertisement in our columns, it will be seen that more light and greater security may be obtained at less than the usual cost."

The foregoing paragraph is from one of the Boston papers. We have paid some attention to that matter, and we are satisfied that Mr. Newell has here a very useful article. We are also furnished with an illustration of the fact that one discovery leads to another, and brings to light that which is useful in other connections. Thus, the manufacture of this fluid produces, from the residuum, oil, naphtha, creosotes, and varnish, and asphaltum, all of which are articles of commercial value. Its light is about equal to that of gas, its combustion is less rapid than that of camphene, and it is furnished at 48 cents per gallon, at retail.

ATLANTIC AND ST. LAWRENCE RAILROAD.—The annual meeting of the Atlantic and St. Lawrence Railroad Company was lately held at Portland. From the report of the directors, we learn that the total cost of the road up to the present time, is \$5,150,277.72. The receipts of the road for the year have been \$254,743.05, and the expenses, \$141,222.66; net receipts, \$113,520.39. The net income of the road to July 1st, 1853, is \$407,218.06.

A NEW article of manufacture, made from the waste of smelting furnaces, and called "lava-ware," is exhibited at the Crystal Palace. After the iron is drawn off, the melted sand and clay, mixed with iron, which remains as waste, greatly in the workmen's way, can be cast into tiles, urns, bowls, table-tops, and various useful things, at a very small cost.

A FARMER'S WIFE IN THE OLDEN TIME.—Sir Anthony Fitcherbert, Chancellor to Henry VIII., thus describes a model farmer's wife:

"It is a wyve's occupation to winnow all manner of cornes, to make malte, to wash and ironying, to make hay, shere corn, and in time of nede to help her husband fill the muckwayne or dung-cart, drive the plow, load hay, corne, and such other.—And go or ride to the market to sell butter, cheese, egges, cheykns, capons, hens, pigs, geese, and all manner of cornes."

SOAP SUDS FOR WATERING PLANTS.—Nothing can be better for summer watering of plants and vines, than the suds of the weekly wash, and no one who desires a good garden will suffer it to be wasted. For cabbages, cucumbers, beets, and the like, it seems especially adapted, and one of the most thrifty grape vines we ever saw, was watered with soap suds almost daily in dry weather. A large supply is not needed at once, but frequent waterings promote rapid and vigorous vegetation.

CHOCOLATE is an elementary preparation of very ancient use in Mexico, from which country it was introduced into Europe by the Spaniards in 1520. It was by them long kept a secret from the rest of the world. Linnæus was so fond of it that he gave the specific name *theobroma*, foods of the gods, to the cacao tree which produced it.

The cacao beans lie in a fruit somewhat like a cucumber, about five inches long and three and a half thick, which contains from 20 to 30 beans arranged in five regular rows with partitions between, and which are surrounded with rose-colored spongy substance like that of watermelons. There are fruits large enough to contain from 40 to 50 beans. After the maturation of the fruit, when their green color has changed to a dark yellow they are plucked, opened, the beans cleaned from the pulp and spread out to dry in the open air.

They are in some places packed immediately for market when they are dry. But in others they are sweated or cured by being packed in a box or a hole in the ground.

The beans being freed from all spoiled or mouldy portions, are to be gently roasted over a fire, in an iron cylinder with holes through which the vapor may escape. After the roasting, which is known to be finished if a strong aroma is sent off, the grains are again freed from all husks. They are then ground in a heated mortar and formed into a paste. This paste, flavored with whatever the manufacturer desires, constitutes the chocolate of commerce.

The cacao bean contains, in 100 parts, besides water:—

Oil,	-	-	-	-	-	-	-	-	-	53.1
Albuminous matter,	-	-	-	-	-	-	-	-	-	16.7
Starch,	-	-	-	-	-	-	-	-	-	10.91
Gum,	-	-	-	-	-	-	-	-	-	7.75
Lignin,	-	-	-	-	-	-	-	-	-	0.9
Red dye stuff,	-	-	-	-	-	-	-	-	-	2.01

NEW BOOKS.

GOLDEN DREAM AND LEADEN REALITIES. By RALPH RAVEN. With an Introductory Chapter by Francis Fogie, Sen., Esq. New-York: G. P. Putnam & Co., 10 Park Place. 1853. 344 pages.

This amusing book announces that its introduction is the work of Mr. Fogie, Sen., hence, he would have us infer, that he, the said Fogie, is an old man, and indeed, he says so, in almost plain English. But if so, he is in grievous error, a most inconceivable delusion, when he writes and even prints, on page 8, of all old men, that "they are a clog on its (the world's) machinery, dirt on its wheels, rust in its joints, a pebble in its shoe," and boldly adds, "it's never been a merry world since old men came in fashion." He says again, "I have always enjoyed the reputation of being as sober and as prudent as my neighbors." We don't know about the prudence, but if he is half as *sober* as his neighbors, there must be some *terra incognita* about here, or at least, within our friend Putnam's ken, that is a little merrier than any we have been accustomed to. The fact is, the whole book is incontestable evidence of the writer's mistake on these points, unless he misrepresents his own age; for he informs us that he, being an old man, is also a companion of like age with Mr. Raven, the author of the *Dream*. We are inclined to think that they are of very nearly the same age and temperament. But, however this may be, and whether old or not, they have put forth one of the most amusing of books, but by no means destitute of good sense and useful lessons. It is a pleasant story of a California gold-digger, that may very agreeably, and not unprofitably, occupy a few leisure hours of those of all ages and of either sex.

ILLUSTRATED MAGAZINE OF ART.—The December number of this journal is before us. We have highly commended former numbers, and as highly commend this, its latest issue. It contains a great amount of matter, both useful and entertaining. The illustrations are numerous. If the pressman could give better impressions of the well-

engraved plates, he would much improve the appearance of the work. Still, many of these are given us in excellent style. A. Montgomery, Publisher, 17 Spruce street.

PUTNAM'S ILLUSTRATED RECORD, &c.—The last number of this beautiful illustration of the exhibition in the Crystal Palace is bi-double, and its literary and artistic merits are increased in a similar ratio. None of its previous numbers are so attractive, nor has any illustrated journal in this country approached, in its artistic skill, and in the elegance of its printing, the excellence of this series. It is, in this respect, entirely without a rival or a competitor in this country. Double numbers, 25 cents.

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THE LECTURES COMPLETE, OF FATHER GAVAZZI; as delivered in New-York, revised and corrected by himself; with translations of his Italian Addresses, &c. By G. B. NICOLINI. New-York: M. W. Dodd. 1854. 12mo, pp. 393.

This volume has been laid by the publisher on our table. The author is a friend and fellow-exile of the lecturer, and a gentleman of education. Being prepared by an eminent stenographer, and revised by Father Gavazzi himself, their authenticity is unquestionable. This volume, therefore, may be appealed to by the advocates of either side of the questions here discussed, as containing the real views of the lecturer, his statements, plans, desires, and aims. It is well executed by the publisher.

MEYER'S UNIVERSUM, which we have failed to see for some time, has again made its appearance on our table, save a few missing numbers, which we should like to receive. Eight numbers of the second volume are published. Together, they form an elegant volume, worthy of any library. Each number contains four handsome engravings, of public buildings, views, &c., of historic fame, and of remarkable beauty, each well and fully described by Mr. Dana, of The Tribune. It is published semi-monthly. Hermann J. Meyer, Publisher, 164 William street.

NEW MUSIC.

WM. HALL & SON, Broadway, have published some very fine music recently, among which are—
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LA BELLE MARIAN, *Valses brillantes ecossaises*, for the pianoforte. By JOHN PRIDHAM. 38 cents, net.

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"In the hazel dell my Nelly's sleeping,
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This must have, as it deserves to have, a very extensive sale.

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Samuel S. Allen, of Salem, N. J., for improvement in the cutting gear of grain and grass-harvesters.

John Blue, of Covert, N. Y., for improvement in carriers to grain-separators.

Cornelius S. Cooper, of New-York, N. Y., for improvement in violins, &c.

Nathaniel Gear, of Zanesville, O., for machine for turning or cutting irregular forms.

James Greenhalgh, jr., of Waterford, Mass., for improvement in power-looms.

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John Jones and Alexander Lyle, of Rochester, N. Y., for improvement in the cutting-gear of straw-cutters.

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Abraham Lash and Miles Moore, of Belleville, O., for improvement in screens of winnowers.

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Thomas Spiller and Anthony Crowhurst, of Middlesex county, England, for improvements in operating vibrating propellers.

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Hot Corn: Life Scenes in New York, Illustrated.

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With Original Designs, Engraved by N. Orr.

BY SOLON ROBINSON.

Now the tall corn is waving o'er the mountain and glen,
And the sickle is reaping both the corn and the men;
And the child that was sleeping where the lamps dimly
shone,

Like the corn, now is withering, in the vale all alone.
"Hot corn," she was crying, in the night, all alone.

"Hot corn! here's your nice hot corn!" in the grave all
alone.

Where the chill rain was falling, sat the poor child asleep,
Where the lights nightly burning, city vigils help keep—
Where the ague was creeping through the blood and the
bone

Of the child that was sleeping on the curb-stone alone.

"Hot corn!" she was crying, in the night all alone.

"Hot corn! here's your nice hot corn!" in the grave all
alone.

The growing taste for works of this kind—works tend-
ing to promote temperance and virtue, to lift up the
lowly, to expose to open day the hidden effects produced
by Rum, to give narratives of misery suffered by the poor
in this city—has induced the Publishers to offer liberal
inducements to the author to use his powerful pen, and
words of fire, to depict his "Life Scenes," and embody
them in a volume, which, we are satisfied, will prove one

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hope it may prove but the commencement of a series.
As an exposé of life among the poor in this city, it will be
read with deep and abiding interest in all parts of this
country. It is a work for the fire-side of every family;
a book that commends itself to the heart.

No one who has read the "Hot Corn" stories as they
appeared in The Tribune, but will rejoice to have the
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all complete and connected, in one handsome volume,
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To a moral and religious public; to all who would
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other's woes; to all who would have their hearts
touched with sympathy for the afflictions of their fellow
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respectfully commended by THE PUBLISHERS.

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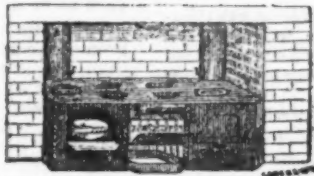
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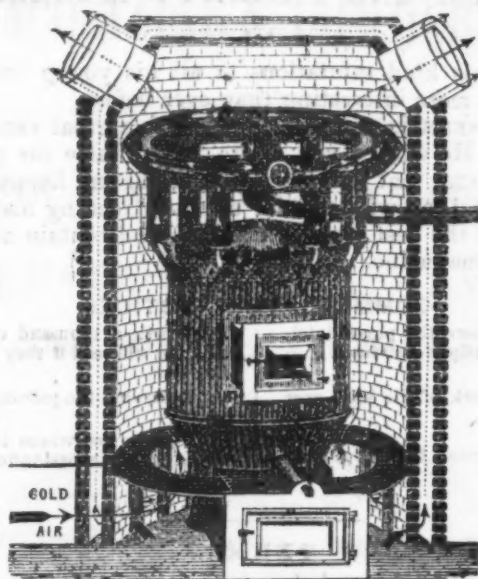
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IN entering upon their twenty-first volume, the conductors of this Magazine tender their thanks to their numerous patrons for their generous co-operation. This is the oldest and most extensively circulated work of the kind in this or any other country. It is designed to be a medium of instruction on the subject of home education, to furnish matter of highest interest and profit to all the members of the family circle, and especially to aid the Christian mother to train up her child "in the way he should go," maintaining evangelical religious principles as the basis of its teachings.

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HUNT'S MERCHANTS' MAGAZINE & COMMERCIAL REVIEW.

ESTABLISHED JULY, 1839.

BY FREEMAN HUNT, EDITOR AND PROPRIETOR.

PUBLISHED MONTHLY.

At 142 Fulton Street, New York,—At Five Dollars per annum.

The Merchants' Magazine and Commercial Review is devoted to Trade, Commerce, and Navigation—Banking, Currency, and Finance—Mercantile and Maritime Law—Fire, Marine and Life Insurance—Ocean and Inland Navigation—Nautical Intelligence—Internal Improvements, including Canals, Railways, and Plank Roads—Rivers and Harbors, and in general all subjects involving the great Commercial and Industrial Interests of the Country and the World.

It has ever been the constant aim, and untiring effort of the Editor and Proprietor to make the Work at once a journal of the latest Commercial Intelligence, and a standard library of reference on all topics of trade, not less indispensable to the Statesman, Political Economist, Jurist, Financier, Banker, Broker, Ship Master, Ship Builder, Mechanic and Manufacturer, than to the Merchant and Business Man; and from the necessarily comprehensive range of its discussions and its Statistics, taking in, as it does, every subject in the wide field of Commerce, the pages of the Magazine will always be found to embody a vast fund of Knowledge for the Farmer, also—for the Cotton Planter of the South, and the Grain Grower of the North.

The Editor and Proprietor has endeavored to infuse into his Magazine a national spirit and character, by securing the aid of able correspondents in all parts of our wide spread Republic, and by exhibiting the resources of every State and Territory of the Union. On mooted points in political economy, banking, and the principles of trade, he has freely admitted articles advocating antagonistic doctrines and opinions; and, while it is his great aim to exhibit facts, and embody the scientific and practical operations of Commerce, the Magazine will be ever open to the free and fair discussion of every subject legitimately falling within its general scope and its original design.

The number for December, 1853, completed the TWENTY-NINTH semi-annual volume of the *Merchants' Magazine*. The work has been enlarged nearly one half since its commencement in July, 1839, and each volume now contains nearly Eight Hundred octavo pages. A few complete sets of the Magazine may be had at the publisher's office, 142 Fulton Street, New York, neatly and substantially bound, for two dollars and a half per volume.

CHAMBER OF COMMERCE OF PARIS.

PARIS, 26 December, 1850.

MR. FREEMAN HUNT,

SIR:—The Chamber of Commerce of Paris, having had occasion to consult the Magazine which you have published for so many years past, could not but fully appreciate its great merit. It has remarked the sustained zeal and care with which you have brought together in its pages, statistical matter of the highest interest, as well as disquisitions of the utmost importance and utility; and the Chamber knows no better way of

testifying its appreciation of your work, than by subscribing for the Magazine for its Library. The Treasurer has been directed to charge one of our correspondents in New York with this duty, and also to forward to you this letter, which we conclude, Sir, by offering you the assurance of our highest consideration.

LEGENTIL, President of the Chamber.

HORACE SAY, Sec'y.

At a stated meeting of the Philadelphia Board of Trade, held on Monday evening, April 21st, 1851, the following resolutions were adopted, without a dissenting voice:

RESOLVED, That the Board of Trade, viewing the importance of a publication, which condenses in an attractive and enduring form, general information and statistics relating to the commercial and industrial pursuits of our country, venture to recommend "*Hunt's Merchants' Magazine and Commercial Review*," as possessing these requisites in an eminent degree, and trust their fellow citizens may be induced to encourage FREEMAN HUNT, Esq., in his arduous labors, by becoming subscribers to his periodical.

RESOLVED, That a copy of the foregoing Resolution be furnished Mr. Hunt, by the Secretary of the Board.

THOS. P. COPE, President.

C. C. CHILDS, Sec'y.

CINCINNATI CHAMBER OF COMMERCE,

February 4th, 1851.

At a meeting of the Cincinnati Chamber of Commerce, February 4th, 1851, the following resolutions were unanimously adopted:

RESOLVED, That HUNT'S MERCHANTS' MAGAZINE AND COMMERCIAL REVIEW, is a work of great interest and utility, and is signally adapted to inform the Merchants upon the numerous facts relative to the foreign and internal trade of the Country, its manufactures and agricultural statistics; and that the thanks of the mercantile community are due to its editor, FREEMAN HUNT, Esq., for the industry and ability with he has conducted it for so many years.

RESOLVED, That we recommend its more general circulation, and that a copy of these resolutions be forwarded to Mr. Hunt.

RICHARD SMITH, Sec'y.

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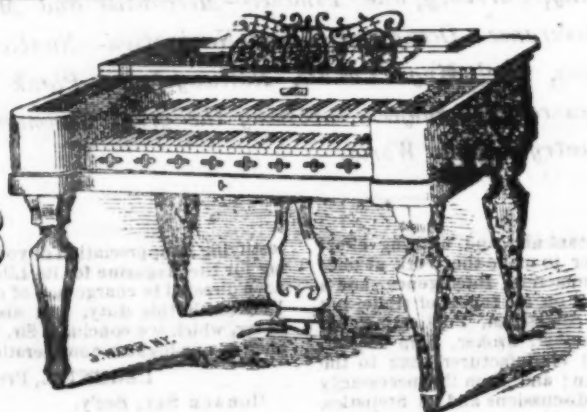
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AMERICAN RAILROAD JOURNAL.

Steam Navigation, Commerce, Mining and Manufactures.

ESTABLISHED 1831.

HENRY V. POOR, EDITOR.

Published at 9 Spruce Street, N. Y. at \$5.00 per annum in advance.

BY JOHN H. SCHULTZ & CO.

This Journal, which has attained its twenty-second year, is now taken by nearly every Railway Company and Engineer of repute in the United States, as well as by those Manufacturers who furnish equipments for the operation of Railways, and Contractors who are permanently engaged in the construction of public works. It has also an extensive circulation among the leading capitalists of Great Britain, France and Germany, who invest in American Securities, and by the same class of people and their agents, in this country. That it was started at an early period in railway history, and has risen, entirely dependent upon its own resources, to be considered as an authority, upon railway matters, in this and other countries, which is looked to by capitalists for a guide in their investments in railway securities, is the best possible evidence of the ability and disinterestedness with which it has been conducted, and the reliability which has characterised its information. It is daily receiving large accessions to its subscription list, and its advertising columns are resorted to by all inventors of improvements in railway equipments, who wish them introduced to the notice of the public in a way to command the attention of those peculiarly interested in their immediate adoption.

The American Railroad Journal

is devoted principally to the dissemination of facts connected with Railways generally, and their proper construction, equipment and operation; also, to the discussion of the merits of newly proposed lines, and the management of old ones, as set forth by their reports and exhibits.

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The Law Department

Will continue under the direction of MR. FRANCIS G. DORR, whose management of it during the last year has commanded universal approval. In the

General Department of Railway and Commercial Intelligence,

MR. HENRY V. POOR, the principal Editor, will have the aid of competent and intelligent assistants to render the Journal the most reliable medium of intelligence, on all subjects of which it treats, to all who have occasion to consult its pages. It will be seen that the AMERICAN RAILROAD JOURNAL commences the year 1854 with offering more attractions than it has ever possessed heretofore. Its STOCK LIST, which is now worth the price of subscription, will be enlarged to include bonds, &c., of all the roads in the country.

All communications should be addressed to the Editor,

H. V. POOR,

9 Spruce Street, New York.

New York and New Haven Railroad.

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ILLUSTRATED.

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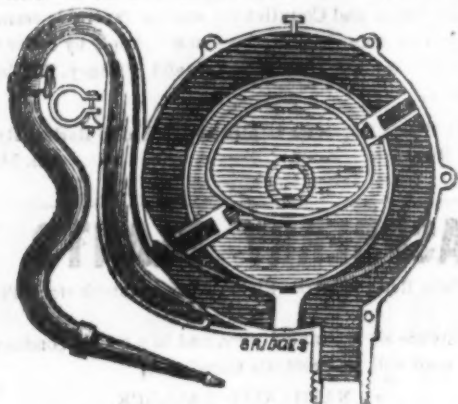
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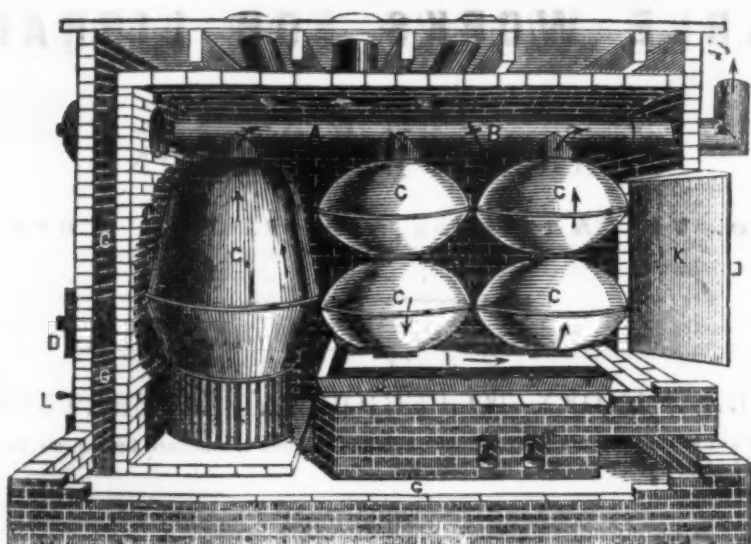
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